Traffic Impact Mitigation Analysis

Parking Study

Trip Generation Comparison

Parking Master Plan

SOUTHWEST TRAFFIC ENGINEERING, LLC

TRAFFIC IMPACT ANALYSIS

ALTA CONTINENTAL

CONTINENTAL DRIVE/SCOTTSDALE ROAD

REVISED 14 AUGUST 2020
26 AUGUST 2019
17 DECEMBER 2018
8 JUNE 2018

PREPARED FOR
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SCOTTSDALE, ARIZONA 85253

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TRAFFIC IMPACT ANALYSIS
ALTA CONTINENTAL
CONTINENTAL DRIVE/SCOTTSDALE ROAD

Executive Summary

The purpose of this traffic study is to evaluate the current and future transportation system within the project study area surrounding the site without and with the proposed Alta Continental project.

Existing and Future Traffic Data Without Project
All of the study intersections currently operate at adequate levels of service (LOS) and are expected to continue doing so in 2021 without the project.

Future Traffic Data With Project
The proposed intersection of North Access/Scottsdale Road is anticipated to experience delays for the eastbound left and westbound left turning movement in the weekday peak hours in 2021 with traffic from the Alta Continental project. This delay is due to the large northbound and southbound through volumes on Scottsdale Road providing an inadequate number of acceptable gaps for vehicles turning from the minor approaches. Un-signalized minor street intersections along four or more lane, major streets such as Scottsdale Road, tend to have their left turn movements from the minor street operate at LOS E or F during the peak hours.

The remaining study intersections are expected to operate at adequate levels of service with the inclusion of the traffic generated by the Alta Continental site in 2021 with the project.

Turn Lane Analysis
Dedicated northbound left turn and southbound right turn lanes are warranted at the proposed intersection of North Access/Scottsdale Road.

The southbound right turn movement at the intersection of North Access/Scottsdale Road in 2021 with the project will require a minimum storage length of 50 feet.

The northbound left turn lane warranted at North Access along Scottsdale Road will require a minimum storage length of 25 feet. The existing two-way, center left turn lane is expected to adequately accommodate left turning volumes at this intersection.

As the eastbound left turning movement at the intersection of North Access/Scottsdale Road is anticipated to experience delays in 2021 weekday peak hours with traffic from the project, the queue length for this eastbound left turning movement was calculated to ensure adequate storage will be provided on site.

The eastbound approach to the intersection of North Access/Scottsdale Road will require a minimum throat distance of 25 feet to accommodate left turning vehicles exiting the proposed site.

Crash Analysis

A review of the crash data shows that nearly 30% of all crashes at the intersection of Continental Drive/Scottsdale Road were rear-end type. This can be attributed to large traffic volumes along Scottsdale Road combined with the presence of a traffic signal. Delays at the intersection of Continental Drive/Scottsdale Road may cause drivers to rush through the intersection, triggering rear-end crashes.

Mitigation

Mitigation measures to address the eastbound left turn delay expected along North Access at Scottsdale Road are limited. However, it is anticipated that vehicles within the Alta Continental site that intend to travel northbound along Scottsdale Road will avoid the excessive delays at the intersection of North Access/Scottsdale Road and choose to travel to the intersection of Continental Drive/Scottsdale Road via West Access to complete their eastbound left turn movement at the existing traffic signal.

Per discussion with the City of Scottsdale, an alternative access configuration at the intersection of North Access/Scottsdale Road was reviewed. The existing median break south of the proposed North Access alignment could be closed – limiting both the Alta Continental North Access and the Scottsdale Tires & Wheels driveway to right-in/right-out only. The existing median would then be extended south, removing the full access provided at the North Galleria Motorcars Driveway. A new southbound left turn lane would be provided at the South Galleria Motorcars Driveway located approximately 330 feet south of the proposed North Access alignment. This alternative would encourage southbound U-Turn movements at this new median break and the vehicular conflict points associated with such U-Turns. While U-Turn movements are allowed along Scottsdale Road and likely currently occur, the removal of a full access driveway serving an existing business may not be possible due to political and economic concerns. It is recommended that the intersection of North Access/Scottsdale Road be configured as analyzed within this report.

Recommendations

Due to limited right-of-way immediately north of the proposed North Access, and the location of an existing driveway that serves the adjacent site (which would conflict with the right turn lane), the construction of a southbound right turn lane at this location is not recommended. Furthermore, while the southbound right turn lane is warranted based on City of Scottsdale guidelines, the installation of a right turn lane is not consistent with the character of Scottsdale Road in the vicinity of the project site and the southbound right tun movement is expected to operate at an adequate level of service without the turn lane.

The intersection of North Access/Scottsdale Road should be constructed to provide a minimum of 25 feet of storage for eastbound left turning vehicles.

TRAFFIC IMPACT ANALYSIS
ALTA CONTINENTAL
CONTINENTAL DRIVE/SCOTTSDALE ROAD

Project Description

Dolce Vita Development has proposed to redevelop the northwest corner of Continental Drive/Scottsdale Road in Scottsdale, Arizona. The development will replace the existing Kia Automobile Dealership with a Planned Unit Development (PUD) that includes 281 units of multi-family housing and 10,125 square feet of variety retail space. The vicinity of the project is shown in **Figure 1**. The site is located as shown in **Figure 2**. It is expected that the project will be completed by the year 2021. Access to the project site will be from two proposed driveways.

The purpose of this traffic impact analysis is to:

- Evaluate the current and future operational characteristics of the adjacent roadway network surrounding the project site.
- Estimate the traffic generation associated with the project and assign that traffic to the existing roadway system.
- Analyze future traffic operations at the existing intersections of Circle K Driveway/Continental Drive and Continental Drive/Scottsdale Road and proposed intersections of North Access/Scottsdale Road and West Access/Continental Drive.
- Determine the need for auxiliary lanes at the two access points directly serving the site.
- Perform a crash analysis to identify any specific crash trends within the study area.

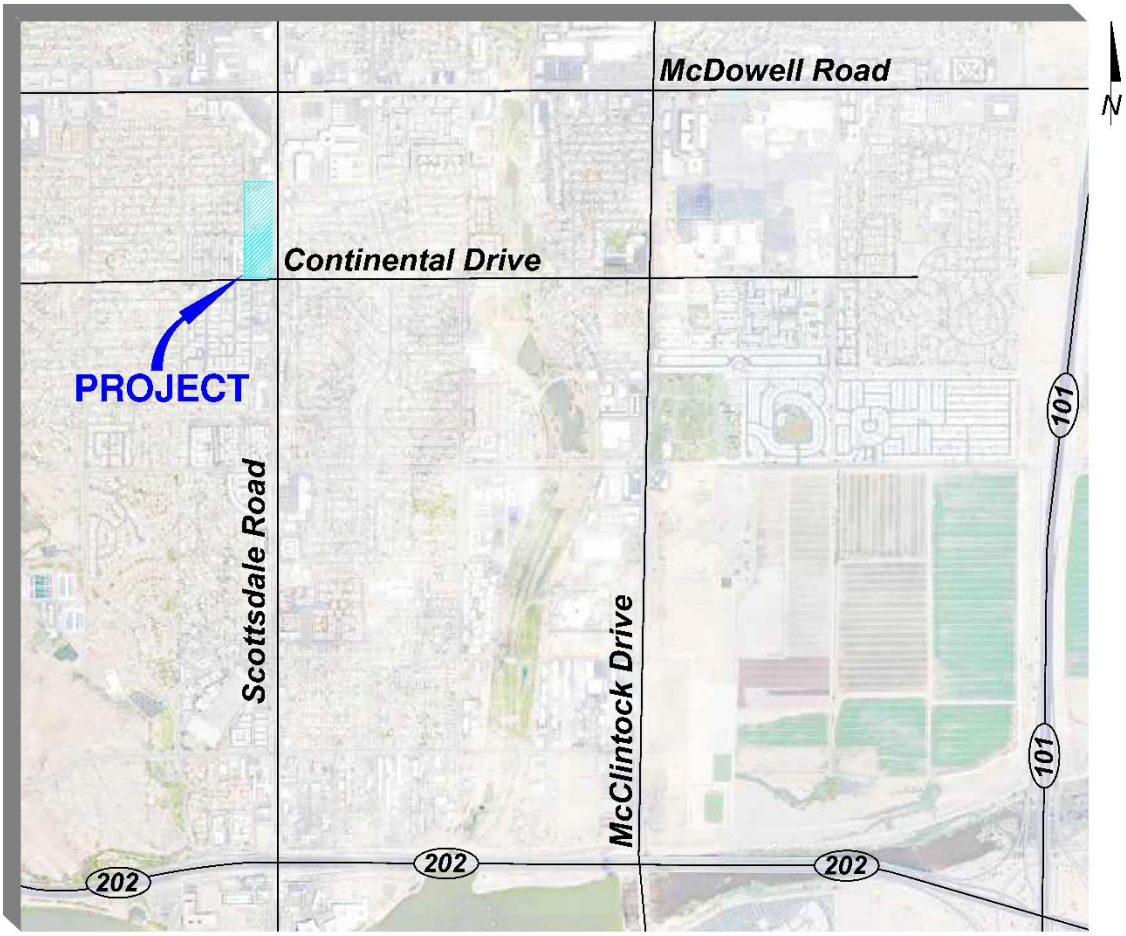
The author of this report is a registered Professional Engineer (Civil) in the State of Arizona having specific expertise and experience in the preparation of traffic impact analyses.

Study Methodology

In order to analyze and evaluate the potential traffic impacts of the proposed development, the following tasks were undertaken:

- Field observation of the proposed site and surrounding area was conducted to evaluate the existing physical and operational characteristics of the adjacent roadway network.
- Site traffic volumes generated by the proposed and existing sites were calculated using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition,* 2017.
- Trip generation calculations for the existing and proposed land uses were compared to one another to determine the difference in traffic generated by the site.
- Calculated site traffic was distributed based on existing traffic volumes and assigned to the primary roadways within the project study limits.

Figure 1 – Vicinity Map



REFUSE COLLECTION REQUIREMENTS

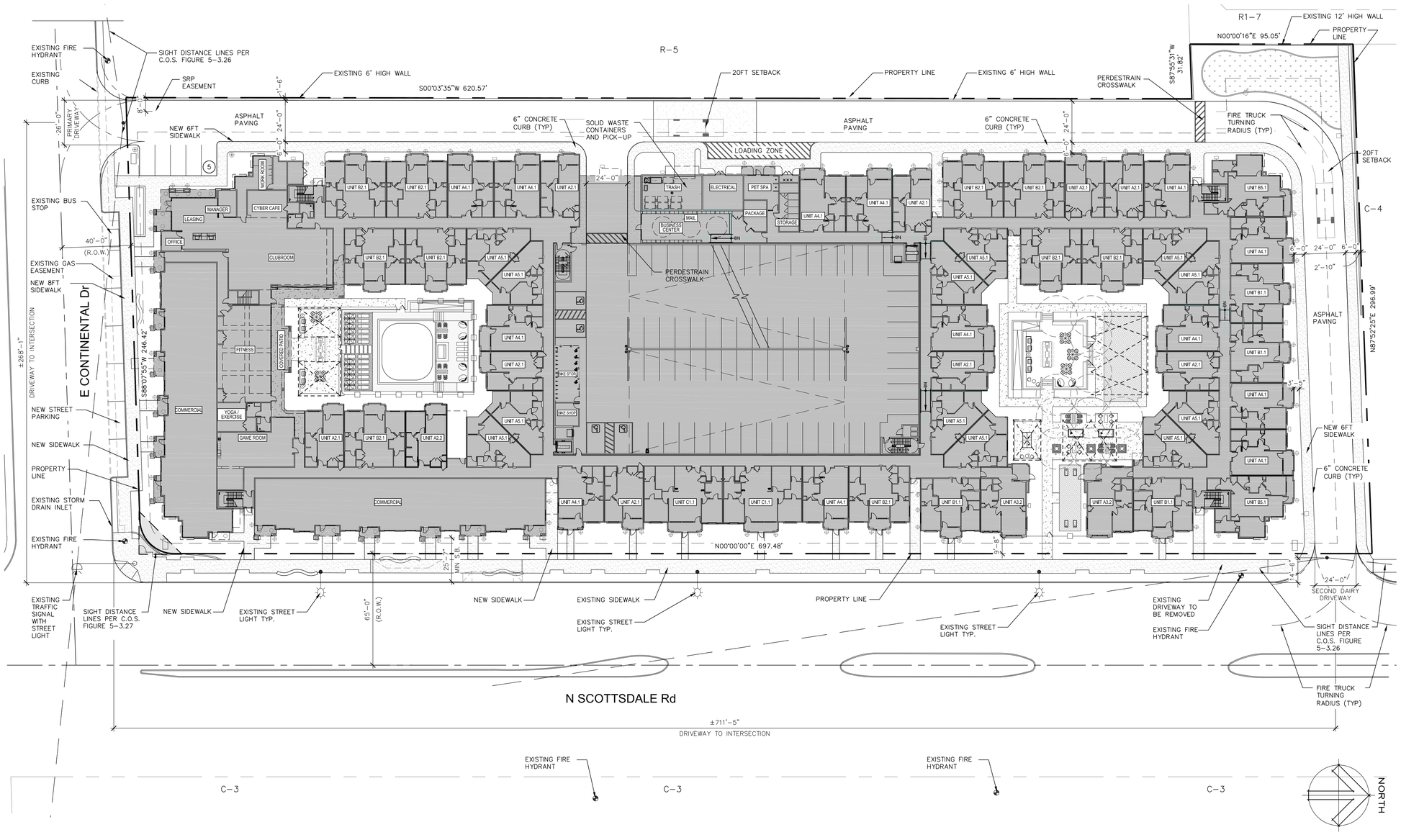
0.5 CUBIC YARDS OF WASTE PER UNIT	= .5 x 279 = 139.5 CUBIC YARDS
MINI MAC COMPACTOR COMPACTION RATIO = 4:1	= 35 CUBIC YARDS
TOTAL CUBIC YARDS OF WASTE GENERATED PER WEEK	= 35 CUBIC YARDS
35 CUBIC YARDS/6 – TWO CUBIC YARD CONTAINERS	= 3 COLLECTIONS PER WEEK

REFUSE COLLECTION NOTE

ON COLLECTION DAY THE TRUCK WILL PULL UP NEXT TO THE REFUSE ROOM ROLL–UP DOOR, CONTAINERS WILL BE WHEELED OUT TO TRUCK WHERE THEY WILL BE EMPTIED INTO THE WASTE TRUCK. THIS WILL CONSIST OF A TWO PERSON TEAM, ONE WILL OPERATE THE TRUCK WHILE THE OTHER WILL MANEUVER THE CONTAINERS INTO POSITION FOR THE OPERATOR TO EMPTY EACH CONTAINER. MAINTENANCE STAFF WILL BE ON HAND TO CLEAN THE AREA AS NECESSARY AND RELOCATE CONTAINERS INTO THE REFUSE ROOM AND CLOSE THE ROLL–UP DOOR.

SITE PLAN NOTES

1. SIGHT DISTANCE TRIANGLES SHALL BE SHOWN ON FINAL PLANS FOR DRIVEWAYS FROM COMMERCIAL SITES AND ANY INTERSECTIONS. AREA WITHIN THE SAFETY TRIANGLE IS TO BE CLEAR OF LANDSCAPING, SIGNS, OR OTHER VISIBILITY OBSTRUCTIONS WITH A HEIGHT GREATER THAN 1.5 FEET. TREES WITHIN THE SAFETY TRIANGLE SHALL BE SINGLE TRUNK AND HAVE A CANOPY THAT BEGINS AT 8 FEET IN HEIGHT UPON INSTALLATION. ALL HEIGHTS ARE MEASURED FROM NEAREST STREET LINE ELEVATION.
2. TEMPORARY/SECURITY FENCING THAT IS REQUIRED OR IS OPTIONALLY PROVIDED SHALL BE IN ACCORDANCE WITH THE ZONING ORDINANCE AND THE DESIGN STANDARDS AND POLICIES MANUAL.
3. THE TEMPORARY/SECURITY FENCE LOCATION SHALL NOT BE MODIFIED OR THE TEMPORARY/SECURITY FENCE SHALL NOT BE REMOVED WITHOUT THE APPROVAL OF THE PLANNING AND DEVELOPMENT SERVICES' INSPECTION SERVICES DIVISION.
4. ALL RIGHTS–OF–WAY ADJACENT TO THIS PROPERTY SHALL BE LANDSCAPED AND MAINTAINED BY THE PROPERTY OWNER.
5. ALL SIGNS REQUIRE SEPARATE PERMITS AND APPROVALS.
6. A MASTER SIGN PROGRAM SHALL BE SUBJECT TO THE APPROVED OF THE DEVELOPMENT REVIEW BOARD PRIOR TO THE ISSUANCE OF A SIGN PERMIT FOR MULTI–TENANT BUILDINGS.
7. NO EXTERIOR VENDING OR DISPLAY SHALL BE ALLOWED.
8. FLAGPOLES, IF PROVIDED, SHALL BE ONE PIECE CONICAL TAPERED.
9. NO EXTERIOR PUBLIC ADDRESS OR SPEAKER SYSTEM SHALL BE ALLOWED.
10. PATIO UMBRELLAS, IF PROVIDED, SHALL BE SOLID COLORS AND SHALL NOT HAVE ANY ADVERTISING IN THE FORM OF SIGNAGE OR LOGOS.
11. ALL EXTERIOR MECHANICAL, UTILITY, AND COMMUNICATION EQUIPMENT SHALL BE SCREENED TO THE HEIGHT OF THE TALLEST UNIT BY PARAPET OR SCREEN WALL THAT MATCHES THE ARCHITECTURAL COLOR AND ARCHITECTURAL FINISH OF THE BUILDING. GROUND MOUNTED MECHANICAL, UTILITY, AND COMMUNICATION EQUIPMENT SHALL BE SCREENED BY A SCREEN WALL THAT MATCHES THE ARCHITECTURAL COLOR AND ARCHITECTURAL FINISH OF THE BUILDING, WHICH IS A MINIMUM OF 1'–0" HIGHER THAN THE HIGHEST POINT OF TALLEST UNIT. (DETAILS ARE STILL REQUIRED.)
12. ALL EQUIPMENT, UTILITIES, OR OTHER APPURTENANCES ATTACHED TO THE BUILDING SHALL BE AN INTEGRAL PART OF THE BUILDING DESIGN IN TERMS OF FORM, COLOR AND TEXTURE.
13. NO EXTERIOR VISIBLE LADDERS SHALL BE ALLOWED.
14. ALL POLE–MOUNTED LIGHTING SHALL BE A MAXIMUM OF 20 FEET IN HEIGHT.
15. NO CHAIN LINK FENCING SHALL BE ALLOWED.
16. NO TURF AREAS SHALL BE PROVIDED.
17. NO IRRIGATION SHALL BE PROVIDED TO UNDISTURBED NATURAL AREA OPEN SPACE (NAOS) AREAS.
18. PROVIDE THE NATURAL AREA OPEN SPACE (NAOS) AND LIMITS OF CONSTRUCTION (LOC) PROTECTION PROGRAM ON THE PLANS:
    a. NO BUILDING, GRADING, OR CONSTRUCTION ACTIVITY SHALL ENCROACH INTO AREAS DESIGNATED AS NAOS, OR OUTSIDE THE DESIGNATED CONSTRUCTION ENVELOPE.
    b. ALL NAOS AND AREA OUTSIDE OF THE LOC SHALL BE PROTECTED FROM DAMAGE PRIOR TO, AND DURING CONSTRUCTION BY THE FOLLOW METHODS:
19. A REGISTERED LAND SURVEYOR SHALL STAKE ALL NAOS AND LOC DISTURBANCE BASED ON THIS EXHIBIT.
20. ± THREE (3) FOOT TALL STEEL REBAR, OR CITY OF SCOTTSDALE INSPECTION SERVICES APPROVED SIMILAR, SHALL BE SET ALONG THE NAOS AND LOC, AND CONNECTED WITH GOLD ROPING BY THE CONTRACTOR PRIOR TO ANY CLEARING OR GRADING.
21. ALL CACTUS SUBJECT TO THE CITY OF SCOTTSDALE'S NATIVE PLANT ORDINANCE DIRECTLY ADJACENT, WITHIN TWO FEET, OG THE NAOS AND LOC LINE SHALL BE FENCED WITH WIRE FENCING TO PREVENT DAMAGE.
22. THE STAKING, ROPING, AND FENCING SHALL BE MAINTAINED INTACT BY THE CONTRACTOR DURING THE DURATION OF THE CONSTRUCTION ACTIVITY.
23. THE CONTRACTOR SHALL REMOVE STAKING, ROPING, AND FENCING AFTER RECEIPT OF THE LETTER OF ACCEPTANCE FROM THE CITY OF SCOTTSDALE FOR ALL CONSTRUCTION WORK.



PROJECT DATA

OVERALL SITE DATA:

SITE AREA:	±4.43 NET ACRES
ZONING:	EXISTING: C–3 PROPOSED: PUD
APN NO'S.:	129–13–002G, 003D, 003E & 004D
PROPOSED USE:	MULTI–FAMILY
PROPOSED DENSITY:	63 DU/NET AC
PROPOSED BUILDING HEIGHT:	48 FEET(4 STORIES) 51 FEET (CORNER TOWER) 58 FEET (MECH/ELEV/STAIR TOWER)
BUILDING AREA:	524,538 S.F.
COMMERCIAL AREA:	10,125 S.F.

UNIT MIX:

ONE BEDROOM UNITS:	182	(65%)
TWO BEDROOM UNITS:	85	(30%)
THREE BEDROOM UNITS:	14	(5%)
TOTAL:	281	D.U.

UNIT TYPE		GROSS LIV. AREA	UNITS	GROSS LIV. AREA
UNIT A1	1 BED/1 BA	677 S.F.	4	2,708 S.F.
UNIT A2.1	1 BED/1 BA	730 S.F.	47	34,310 S.F.
UNIT A2.2	1 BED/1 BA	772 S.F.	1	772 S.F.
UNIT A3.1	1 BED/1 BA	801 S.F.	4	3,204 S.F.
UNIT A3.2	1 BED/1 BA	1,013 S.F.	6	6,078 S.F.
UNIT A4	1 BED/1 BA	857 S.F.	57	48,849 S.F.
UNIT A5	1 BED/1 BA	777 S.F.	58	45,066 S.F.
UNIT A6	1 BED/1 BA	755 S.F.	4	3,020 S.F.
UNIT A7	1 BED/1 BA	897 S.F.	2	1,794 S.F.
UNIT B1	2 BED/2 BA	1,060 S.F.	20	21,200 S.F.
UNIT B2	2 BED/2 BA	1,155 S.F.	47	54,285 S.F.
UNIT B3.1	2 BED/2 BA	1,064 S.F.	2	2,128 S.F.
UNIT B3.2	2 BED/2 BA	1,127 S.F.	4	4,508 S.F.
UNIT B5	2 BED/2 BA	1,235 S.F.	11	13,585 S.F.
UNIT C1	3 BED/2 BA	1,525 S.F.	14	21,350 S.F.
TOTAL:			281 D.U.	262,857 S.F.
AVG. S.F.				935 S.F.

PARKING:

PROVIDED:	
OPEN PARKING	12 P.S.
GARAGE PARKING (6.5 LEVELS)	478 P.S.
TOTAL PROVIDED:	1.75 P.S. PER UNIT = 490 P.S.
REQUIRED (PER TABLE 9.103):	
COMMERCIAL AREAS	
1 SPACE PER 325 S.F.	10,125 S.F./325 = 32 P.S.
TOTAL – COMMERCIAL	32 P.S.
DWELLING, MULTIFAMILY	
1 BEDROOM	182 X 1.3 = 237 P.S.
2 BEDROOM	85 X 1.7 = 145 P.S.
3 BEDROOM	14 X 1.9 = 27 P.S.
TOTAL – MULTIFAMILY	409 P.S.
TOTAL – OVERALL	441 P.S.

SYMBOL SCHEDULE

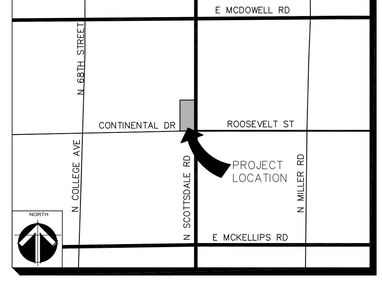
- BUILDING NUMBER / BUILDING TYPE (2 / 3)
- F — FIRE RISER LOCATION
- FDC — FDC LOCATION
- 5 — # OF SPACES IN ROW (9'X18' PARKING SPACE)
- 2'–6" OVERHANG
- DECORATIVE WALL LIGHTING
- WALL LIGHTING
- 25' INSIDE TURNING RADIUS / 49' OUTSIDE TURNING RADIUS — IN ACCORDANCE WITH SCOTTSDALE FIRE DEPT STANDARDS
- MP — METER PANEL LOCATION
- T — ELECT. TRANSFORMER
- PEDESTRIAN CROSSWALK
- ACCESSIBLE PATH OF TRAVEL
- SITE LIGHTING
- FIRE HYDRANT

FIRE NOTES: EMERGENCY COMMUNICATION GENERAL NOTES

1. ALL NEW BUILDINGS SHALL HAVE APPROVED RADIO COVERAGE FOR EMERGENCY RESPONDERS WITHIN THE BUILDING BASE UPON THE EXISTING COVERAGE LEVELS OF THE PUBLIC SAFETY COMMUNICATION SYSTEM OF THE JURISDICTION A THE EXTERIOR OF THE BUILDING.
2. A CONSTRUCTION PERMIT FOR THE INSTALLATION OF OR MODIFICATION TO EMERGENCY RESPONDER RADIO COVERAGE SYSTEM AND RELATED EQUIPMENT IS REQUIRED AS SPECIFIED IN SECTION 105.7.6. CONTACT FIRE PREVENTION FOR ADDITIONAL INFORMATION.
3. PROVIDE SIGNAGE ON BUILDING DOORS LEADING INTO FIRE ALARM CONTROL PANEL, FIRE RISER ROOMS, ELECTRICAL ROOMS, ROOF ACCESS, ECTC.

VICINITY MAP:

SCALE: N.T.S.



0 15' 30' 60'

SITE PLAN

biltform architecture group, LLC.
11460 north cave creek road , suite 11
phoenix , arizona 85020
Phone 602.285.9200 Fax 602.285.9229

PRELIMINARY NOT FOR CONSTRUCTION

ALTA CONTINENTAL APARTMENTS

Apartment Homes
SCOTTSDALE, ARIZONA

8777 E. Via De Ventura, Suite 201, Scottsdale, AZ. 85258

WOOD PARTNERS
PHONE: 480-607-0622

PLANNING SUBMITTAL
05 / 14 / 2020

REVISIONS:
1 –
2 –
3 –
4 –
5

JOB NO: 20-031
SCALE: 1"=30'-0"
SHEET NO:

A1.1

14-ZN-2018
9/1/2020

- Capacity analyses were performed for the existing conditions and future conditions without and with the project based on an opening year of 2021.
- The intersections were analyzed using the methodology presented in the *2016 Highway Capacity Manual 6th Edition (HCM 6th).*
- The need for auxiliary turn lanes at the study intersections were evaluated based on City of Scottsdale guidelines.
- Crash records were obtained from the City of Scottsdale to identify any specific crash trends within the study area.

Existing Conditions

The existing development at the northwest corner of Continental Drive/Scottsdale Road is a Kia Automobile Dealership. The dealership is served by two existing driveways, one on Continental Drive and one on Scottsdale Road. The access point along the north side of Continental Drive, west of Scottsdale Road, is aligned with the Circle K Driveway on the south side of Continental Drive.

The study area includes the signalized intersection of Continental Drive/Scottsdale Road and the un-signalized intersection of Circle K Driveway/Continental Drive.

Scottsdale Road is a north-south aligned major arterial with a posted speed limit of 40 miles per hour (mph). Three through lanes are offered in each direction, separated by a raised concrete median. Curb, gutter, and sidewalk exist on both sides of the roadway. Bike lanes are provided on both sides of Scottsdale Road, north of Continental Drive.

West of Scottsdale Road, Continental Drive is a three-lane minor collector street. Separated by a two-way, center left turn lane, one lane is provided for eastbound travel and one lane is offered to westbound traffic. To the east, Continental Drive transitions to a two-lane roadway and is known as Roosevelt Street. Curb, gutter, and sidewalk are provided on both sides of the roadway.

Existing lane configurations and traffic control are shown in **Figure 3**.

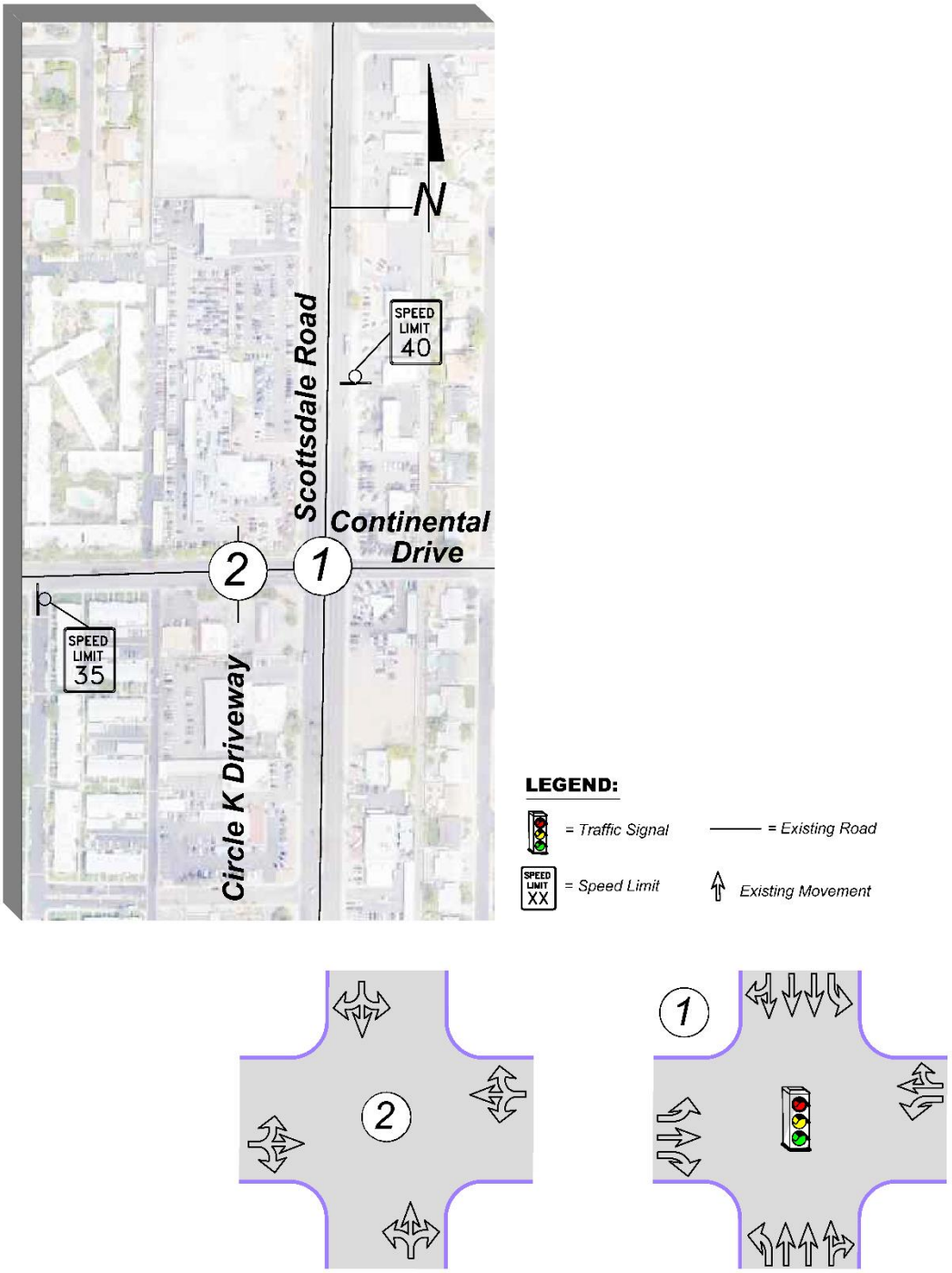
Existing Traffic Data

In order to form a basis for analysis of the project impacts, weekday AM and PM peak hour turning movement counts were conducted at the existing intersections of Circle K Driveway/Continental Drive and Continental Drive/Scottsdale Road.

The weekday turning movement counts were conducted from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM in May 2018.

Weekday daily total traffic volumes along Scottsdale Road for 2018 in the vicinity of Continental Drive were obtained from historical traffic counts from the City of Scottsdale website.

Figure 3 – Existing Lane Configurations and Traffic Control



The 2018 existing weekday daily total, weekday AM peak hour, and weekday PM peak hour traffic volumes are shown in **Figure 4**. The complete traffic count summaries can be found in the Appendix. The 2018 traffic volumes shown in **Figure 4** were then projected, utilizing the 2% annual growth rate, to 2020, as shown in **Figure 5**. The 2020 weekday peak hour traffic volumes shown in **Figure 5** will serve as the baseline for analysis of existing conditions.

Access

A new driveway on the west side of Scottsdale Road, located approximately 710 feet north of Continental Drive, will be constructed and aligned with the existing Scottsdale Tires & Wheels on the east side of the roadway. The location of this existing alignment is located approximately 60 feet north from the edge of an existing raised, concrete median along Scottsdale Road, which currently limits access into the Scottsdale Tires & Wheels site to right-in/right-out access only.

To facilitate full access into both the existing site to the east and the proposed Alta Continental development, the existing raised median along Scottsdale Road will be 'cut back' to provide adequate storage and taper lengths for northbound and southbound left turning movements at the proposed North Access. This new median configuration removes the potential conflict point of vehicles turning onto southbound Scottsdale Road from North Access to make an immediate U-Turn to continue northbound along Scottsdale Road. With this proposed access configuration, eastbound and westbound traffic at the intersection of North Access/Scottsdale Road will be STOP controlled and be provided a dedicated left turn lane and a shared through/right turn lane to exit their respective sites. Northbound vehicles will make use of a left turn lane, two through lanes, and a shared through/right turn lane while the southbound approach to the proposed intersection will offer a dedicated left turn lane, two through lanes and a shared through/right turn lane.

The redevelopment of the site will remove the access provided to the site by the north leg of the intersection of Circle K Driveway/Continental Drive, located approximately 100 feet west of Scottsdale Road.

The proposed West Access will be located approximately 100 feet west of Circle K Driveway, along the north side of Continental Drive. To enter the site, eastbound vehicles will utilize the existing two-way, center left turn lane while westbound travel will be offered a shared through/right turn lane. Southbound vehicles exiting the site will be provided a shared left turn/right turn lane. On the south side of Continental Drive, offset from West Access, Bull Run is a gated driveway that serves a multifamily housing complex to the south. The gate at the intersection of Bull Run/Continental Drive restricts access to and from these residences and is not expected to create conflicts with vehicles entering the Alta Continental site at West Access.

Figure 6 shows the locations, geometry, and spacing for the proposed access points serving the Alta Continental site that will serve as a baseline of the analysis in the report.

Figure 4 – 2018 Existing Weekday Peak Hour Traffic Volumes

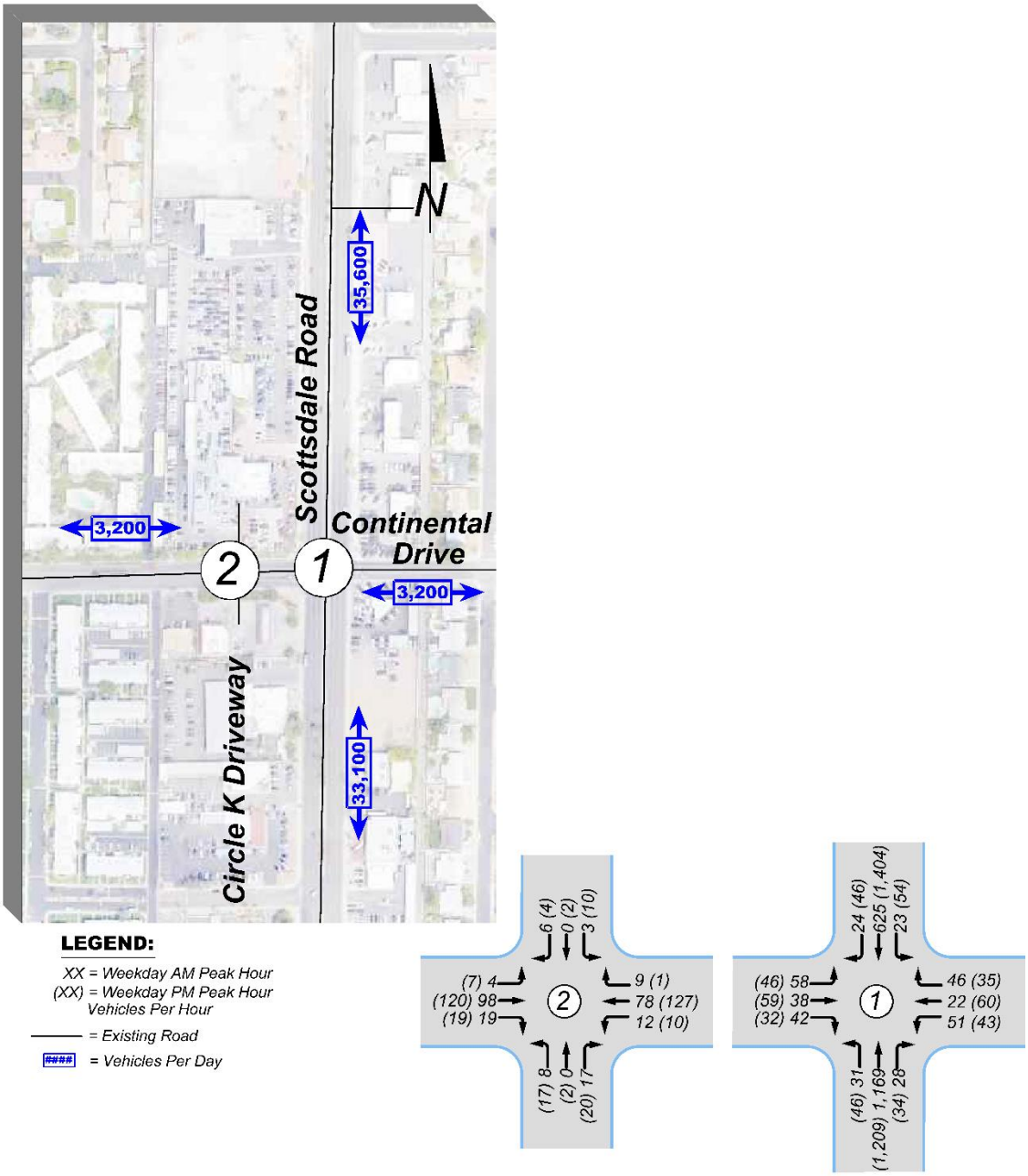


Figure 5 – 2020 Existing Weekday Peak Hour Traffic Volumes

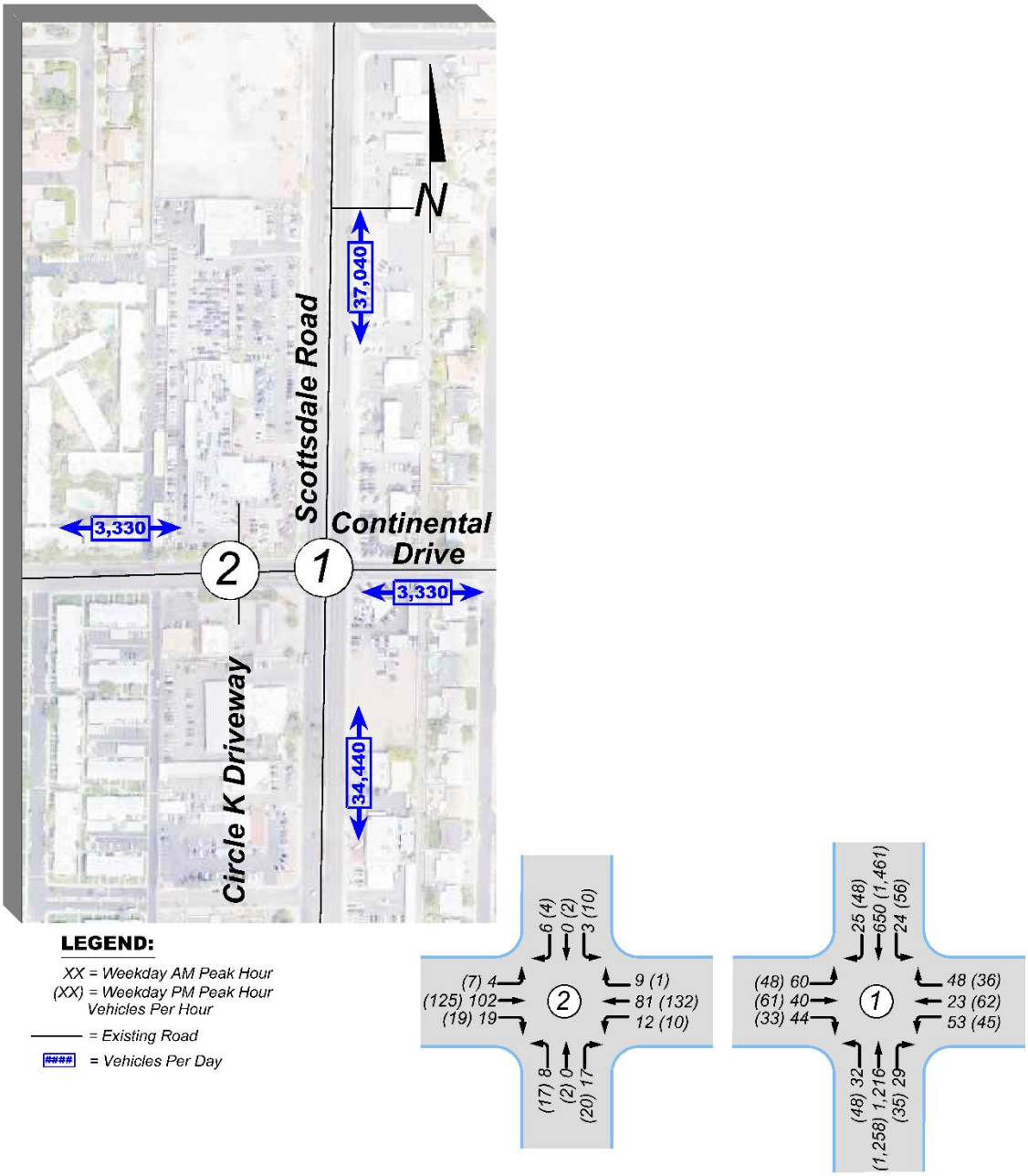
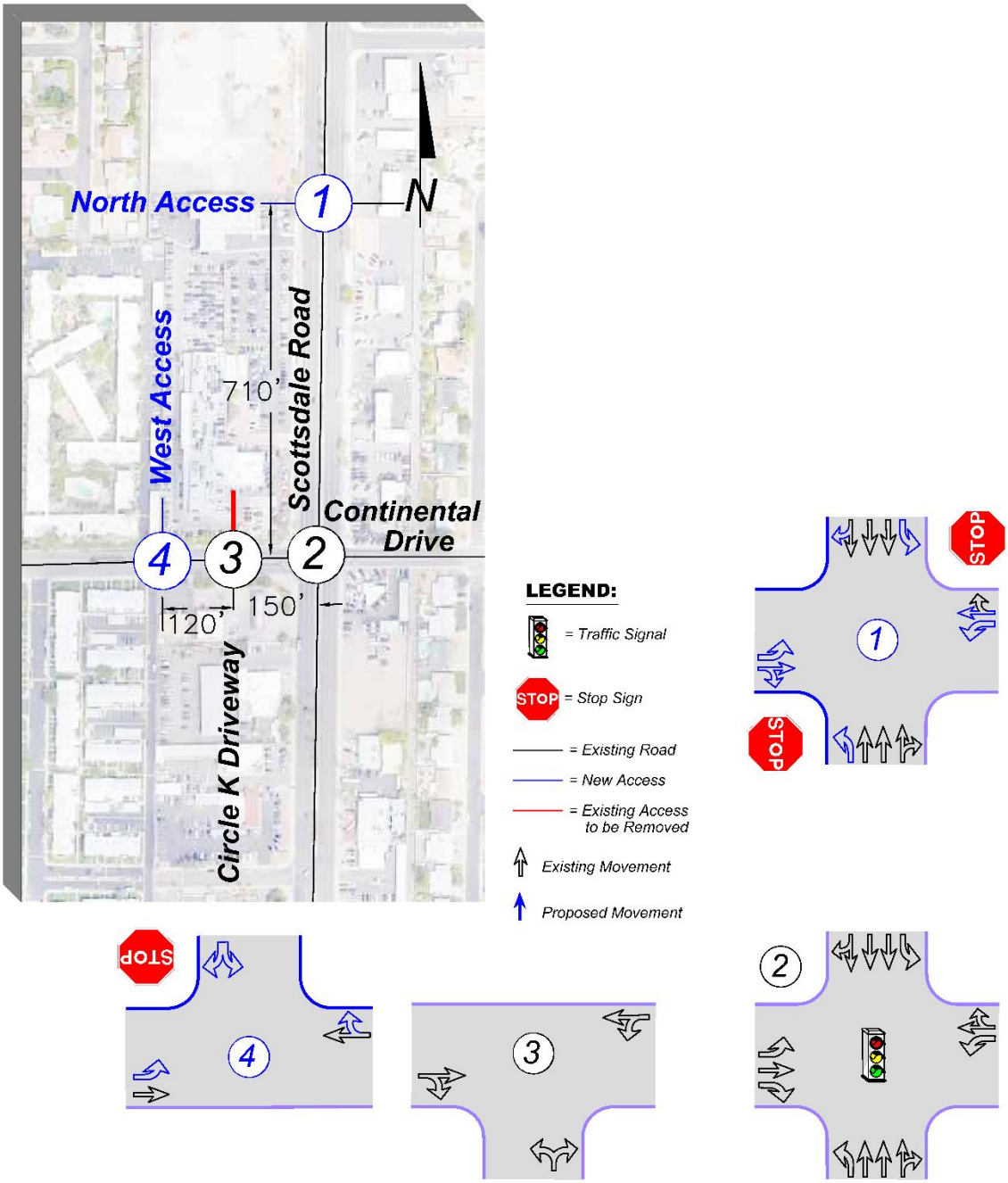


Figure 6 – Study Configuration and Access Spacing



Trip Generation

Trip generation for the project was developed utilizing nationally agreed upon data contained in the Institute of Transportation Engineers (ITE) publication *Trip Generation, 10th Edition*, 2017.

The trip generation was estimated for the construction of 281 apartment units and 10,125 square feet of variety retail space utilizing ITE Land Use Codes (LUC) 221, Multi-Family Housing, Mid-Rise and 814, Variety Store, respectively.

Table 1 presents the results of the ITE trip generation based on the expected uses for the proposed Alta Continental project. The complete trip generation calculations can be found in the Appendix of the report.

Table 1 – Weekday Project Site Generated Trips Using ITE Trip Generation

Time Period	281 Apartment Units, Mid-Rise (LUC 221)	10,125 sqft of Variety Retail (LUC 814)	Total
Average Daily, Inbound (vtpd)	765	322	1,087
Average Daily, Outbound (vtpd)	765	322	1,087
Total Daily	**1,530**	**644**	**2,174**
AM Peak Hour, Inbound (vtph)	27	19	46
AM Peak Hour, Outbound (vtph)	75	14	89
Total AM Peak	**102**	**33**	**135**
PM Peak Hour, Inbound (vtph)	76	36	112
PM Peak Hour, Outbound (vtph)	48	34	82
Total PM Peak	**124**	**70**	**194**

vtpd - vehicle trips per day, vtph - vehicle trips per hour

As part of the Alta Continental project, the existing Kia Automobile Dealership at the northwest corner of Continental Drive/Scottsdale Road will be demolished and replaced by the proposed apartment units and retail space. Trip generation for the dealership was calculated based on the existing 20,900 square feet of building space that includes the indoor showroom, office space, and vehicle service area. **Table 2** shows the difference in trip generation between the existing dealership and the proposed Alta Continental development.

Table 2 – Existing vs. Proposed Trip Generation Comparison

Time Period	Existing Automobile Sales (LUC 840)*	Proposed Development	Difference
Average Daily, Inbound (vtpd)	291	1,087	796
Average Daily, Outbound (vtpd)	291	1,087	796
Total Daily	**582**	**2,174**	**1,592**
AM Peak Hour, Inbound (vtph)	29	46	17
AM Peak Hour, Outbound (vtph)	11	89	78
Total AM Peak	**40**	**135**	**95**
PM Peak Hour, Inbound (vtph)	20	112	92
PM Peak Hour, Outbound (vtph)	31	82	51
Total PM Peak	**51**	**194**	**143**

vtpd - vehicle trips per day, vtph - vehicle trips per hour

As shown in **Table 2**, the redevelopment of the project site is anticipated to generate approximately 95 more vehicle trips per hour (vtph) and 143 more vtph in the weekday AM and PM peak hours, respectively.

Trip Distribution & Assignment

Trip distribution for the proposed project was based on existing traffic patterns observed at the intersection of Continental Drive/Scottsdale Road. **Figure 7** shows the weekday peak hour trip distribution for the project as a percentage of net new primary trips.

Figure 8 shows the assignment of generated vehicle trips to the project intersections within the study area at the completion of the project for the opening year of 2021.

Existing Traffic Operations

Analysis of current intersection operations was conducted for the weekday AM and PM peak hours using the nationally accepted methodology set forth in the *Highway Capacity Manual 6th Edition* Transportation Research Board, 2016 (HCM 6th). The computer software Synchro 10 was utilized to calculate the levels of service for individual movements, approaches, and for the intersections as a whole.

Level of service (LOS) is a qualitative measure of the traffic operations at an intersection or on a roadway segment. Level of service is ranked from LOS A, which signifies little or no congestion and is the highest rank, to LOS F, which signifies congestion and jam conditions. LOS D is typically considered adequate operation at signalized and un-signalized intersections in developed areas.

Figure 7 – Weekday Peak Hour Trip Distribution

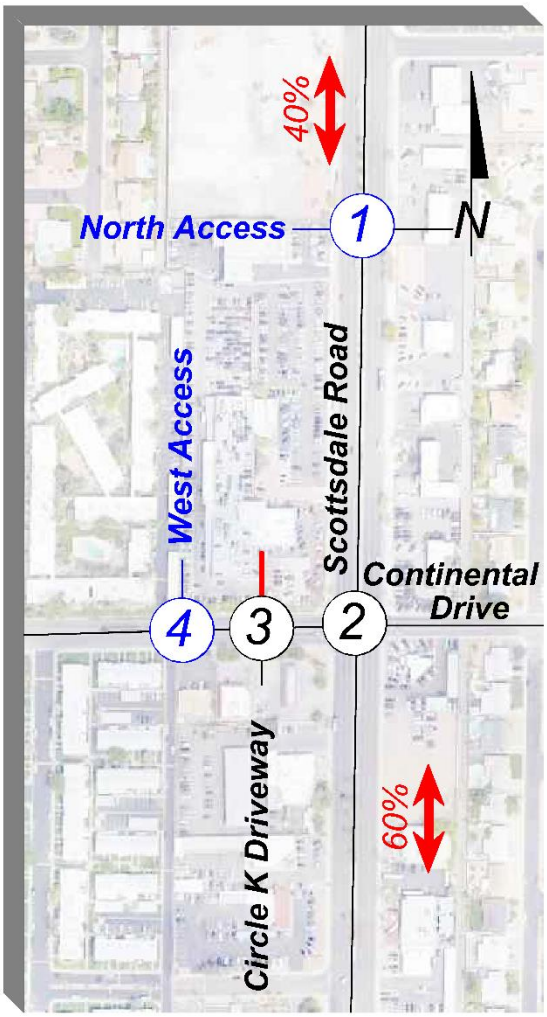
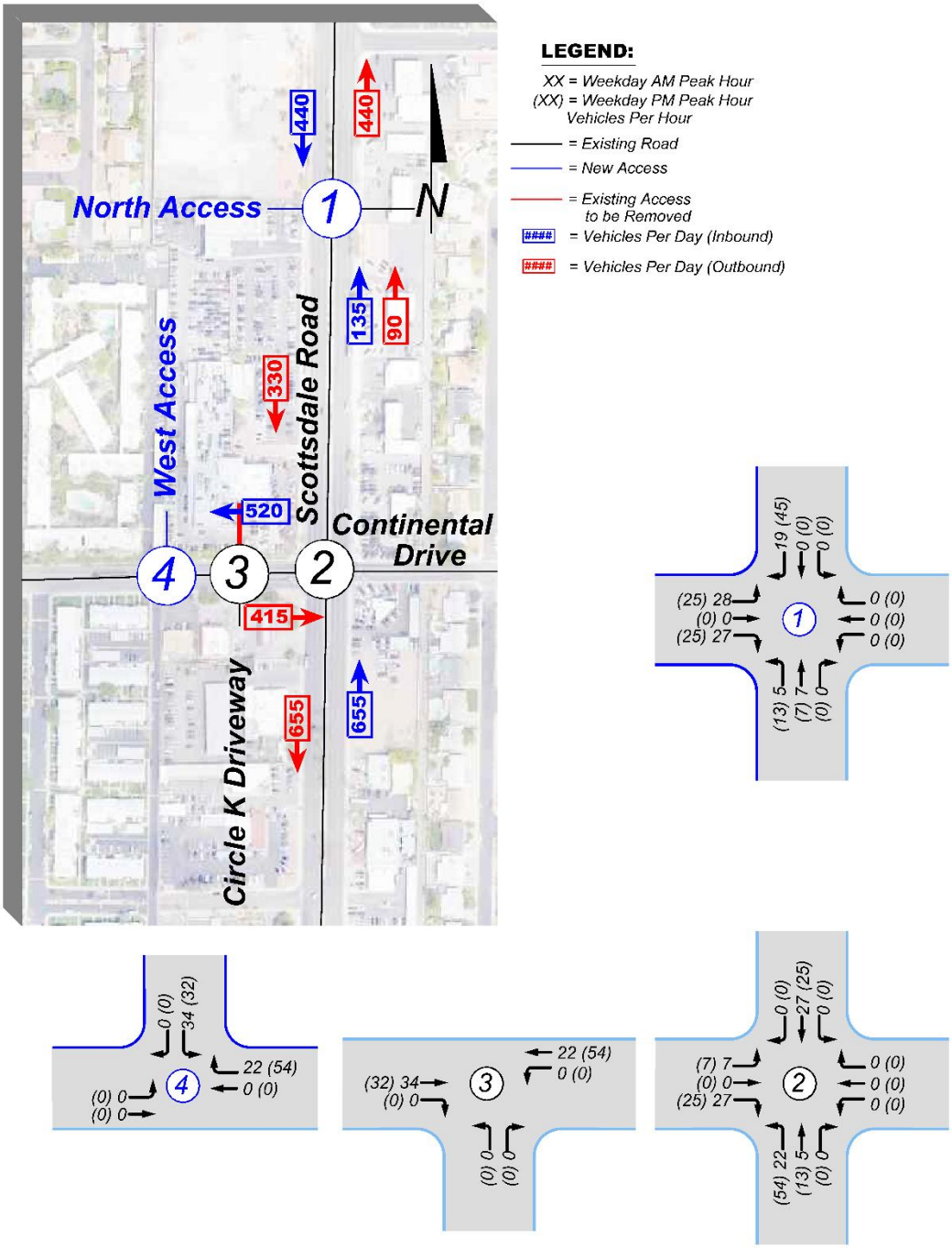


Figure 8 – Weekday Peak Hour Trip Assignment



At signalized intersections, level of service is calculated for each movement and then is summed in a weighted fashion to yield the LOS for the approach and for the intersections a whole. The criteria for level of service at signalized intersections are shown in **Table 3.**

In calculating the levels of service, assumed signal phasing and timing data was used. The following assumptions were also made:

- Cycle length – 90 seconds
- Lane widths – 12 feet
- Approach grade – 0%
- Right turn on red allowed

Table 3 - Level of Service Criteria – Signalized Intersections

Level-of-Service	Average Total Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 20.0 seconds/vehicle
C	> 20.0 and ≤ 35.0 seconds/vehicle
D	> 35.0 and ≤ 55.0 seconds/vehicle
E	> 55.0 and ≤ 80.0 seconds/vehicle
F	> 80.0 seconds per vehicle

At un-signalized intersections, level of service is predicted/calculated for those movements which must either stop for or yield to oncoming traffic and is based on average control delay for the particular movement. Control delay is the portion of total delay attributed to traffic control measures such as stop signs and traffic signals. The criteria for level of service at un-signalized intersections are shown in **Table 4.**

Table 4 – Level of Service Criteria – Un-signalized Intersections

Level-of-Service	Delay
A	≤ 10 seconds
B	> 10 and ≤ 15 seconds/vehicle
C	> 15 and ≤ 25 seconds/vehicle
D	> 25 and ≤ 35 seconds/vehicle
E	> 35 and ≤ 50 seconds/vehicle
F	> 50 seconds per vehicle

Existing levels of service were calculated for the study intersections. The results of this analysis are shown in **Table 5**. Complete capacity calculations are included in the Appendix.

Table 5 – Existing Weekday Peak Hour Levels of Service

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Signalized Intersections				
Continental Drive/Scottsdale Road				
Overall Intersection	A	9.0	B	10.3
Eastbound Left	B	17.2	C	21.5
Eastbound Through	B	15.2	B	19.0
Eastbound Right	B	15.5	B	18.6
Westbound Left	B	16.3	C	20.2
Westbound Through/Right	B	16.1	C	20.1
Northbound Left	A	5.0	A	6.1
Northbound Through	A	8.4	A	8.7
Northbound Through/Right	A	9.4	A	9.6
Southbound Left	A	5.6	A	5.6
Southbound Through	A	6.8	A	9.4
Southbound Through/Right	A	7.2	B	10.6
Un-Signalized Intersections				
Circle K Driveway/Continental Drive				
Eastbound Left/Through/Right	A	7.4	A	7.5
Westbound Left/Through/Right	A	7.5	A	7.5
Northbound Left/Through/Right	A	9.5	B	10.2
Southbound Left/Through/Right	A	9.3	B	10.7

Delay - seconds per vehicle

As shown in **Table 5**, all of the existing study intersections currently operate at an adequate LOS during the weekday AM and PM peak hours.

Future Traffic Operations Without Project

In order to assess the impacts of the project on future traffic operations, traffic projections were made for the opening year of 2021.

A review of historical traffic data in the vicinity of the project showed increasing and decreasing traffic volumes. Due to this, a 2% annual traffic growth rate was used. Weekday traffic volumes in 2021 without the project were estimated with a 2% annual growth rate in **Figure 9**.

As with the current volumes, levels of service were calculated for each of the intersections in the study area for the study year 2021 without the project. Intersection levels of service for 2021 without the project are shown in **Table 6.** Complete capacity calculations are included in the Appendix.

Figure 9 – 2021 Weekday Peak Hour Traffic Volumes Without Project

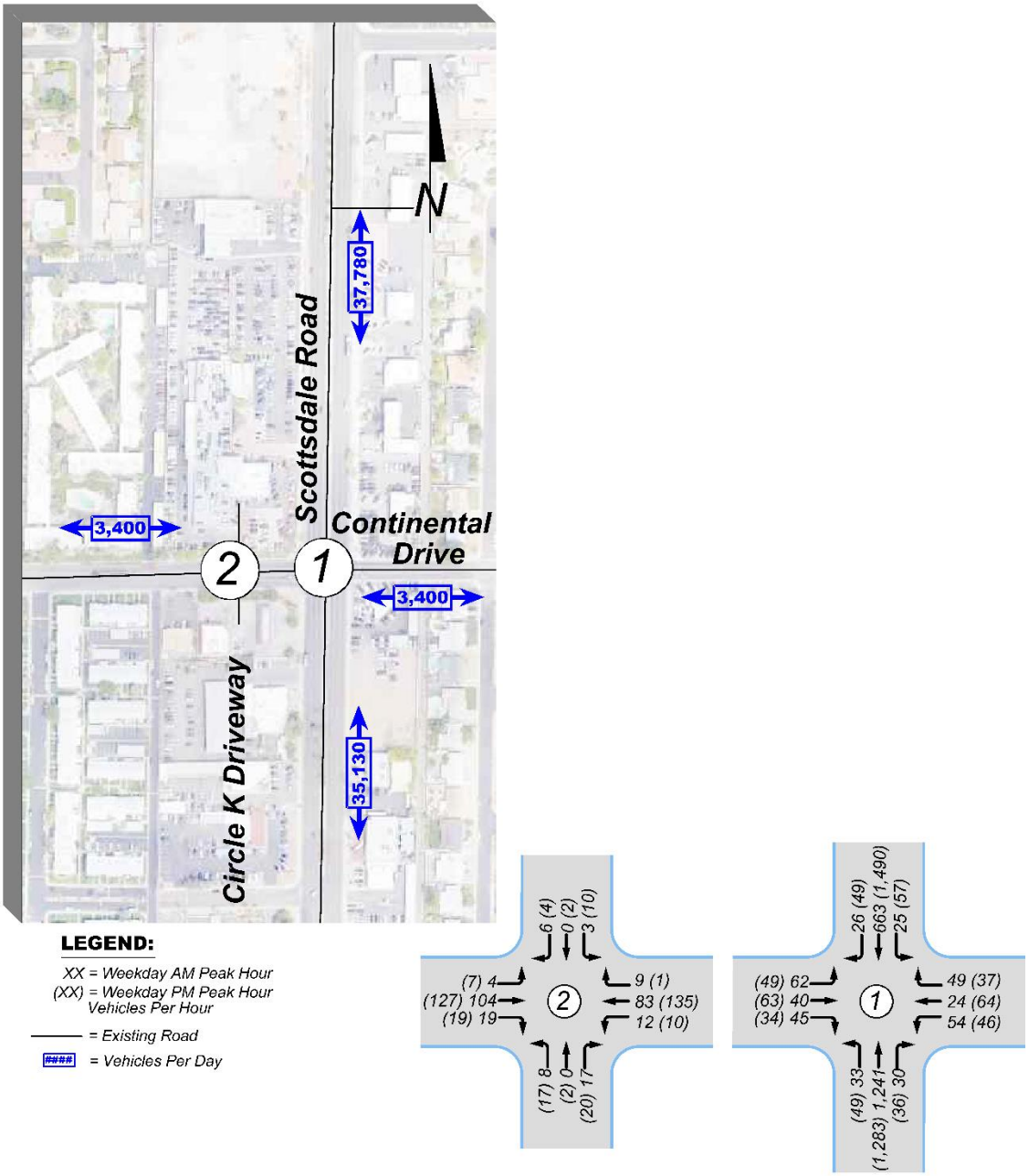


Table 6 – 2021 Weekday Peak Hour Levels of Service Without Project

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Signalized Intersections				
Continental Drive/Scottsdale Road				
Overall Intersection	A	9.2	B	10.5
Eastbound Left	B	17.3	C	21.5
Eastbound Through	B	15.2	B	19.0
Eastbound Right	B	15.5	B	18.6
Westbound Left	B	16.2	C	20.2
Westbound Through/Right	B	16.0	C	20.1
Northbound Left	A	5.0	A	6.3
Northbound Through	A	8.6	A	9.0
Northbound Through/Right	A	9.7	A	9.9
Southbound Left	A	5.7	A	5.7
Southbound Through	A	7.0	A	9.7
Southbound Through/Right	A	7.4	B	11.0
Un-Signalized Intersections				
Circle K Driveway/Continental Drive				
Eastbound Left/Through/Right	A	7.4	A	7.5
Westbound Left/Through/Right	A	7.5	A	7.6
Northbound Left/Through/Right	A	9.5	B	10.9
Southbound Left/Through/Right	A	9.3	B	10.8

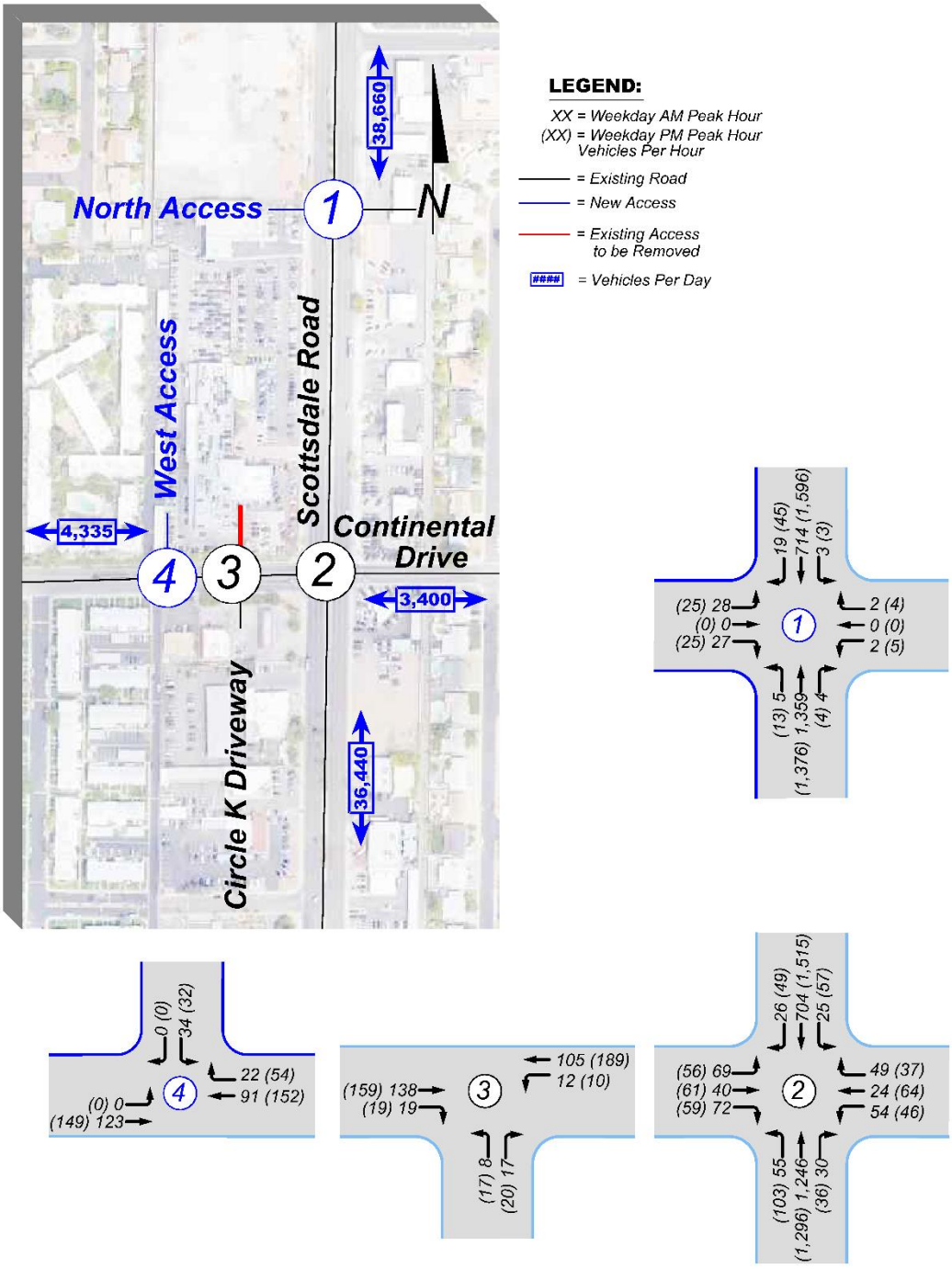
Delay - seconds per vehicle

As shown in **Table 6,** the intersections of Continental Drive/Scottsdale Road and Circle K Driveway/Continental Drive continue to operate at adequate levels of service for the weekday AM and PM peak hours.

Future Traffic Operations With Project

In order to assess the impacts of the project on future traffic operations, levels of service were calculated for each project intersection in 2021, with the project. Weekday peak hour traffic volumes for 2021 without the project were combined with the estimated trips generated by the project to yield weekday peak hour traffic volumes with the project. The weekday peak hour traffic volumes with the project for 2021 are shown in **Figure 10**. To reflect the redevelopment of the project site, existing vehicle trips into and out of the north leg of the intersection of Circle K Driveway/Continental Drive were removed from the analysis.

Figure 10 – 2021 Weekday Peak Hour Traffic Volumes With Project



Furthermore, vehicle trips into and out of the east leg of the intersection of North Access/Scottsdale Road were estimated based on the existing, approximately 3,800 square feet tire shop utilizing ITE Land Use Codes (LUC) 951, Tire Store. **Table 7** presents the results of the ITE trip generation based on the existing Scottsdale Tires & Wheels site. The complete trip generation calculations can be found in the Appendix of the report.

Table 7 – Weekday Adjacent Site Generated Trips

Time Period	3,800 square feet Tire Store (LUC 848)
Average Daily, Inbound (vtpd)	55
Average Daily, Outbound (vtpd)	55
Total Daily	**110**
AM Peak Hour, Inbound (vtph)	7
AM Peak Hour, Outbound (vtph)	4
Total AM Peak	**11**
PM Peak Hour, Inbound (vtph)	7
PM Peak Hour, Outbound (vtph)	9
Total PM Peak	**16**

vtpd - vehicle trips per day, vtph - vehicle trips per hour

Weekday intersection levels of service for 2021, with the project, were then calculated as shown in **Table 8**. Complete capacity calculations are included in the Appendix.

As shown in **Table 8**, the proposed intersection of North Access/Scottsdale Road is anticipated to experience delays for the eastbound left and westbound left turning movement in the weekday peak hours in 2021 with traffic from the Alta Continental project. This delay is due to the large northbound and southbound through volumes on Scottsdale Road providing an inadequate number of acceptable gaps for vehicles turning from the minor approaches.

Un-signalized minor street intersections along four or more lane, major streets such as Scottsdale Road, tend to have their left turn movements from the minor street operate at LOS E or F during the peak hours.

Table 8 – 2021 Weekday Peak Hour Levels of Service With Project

Intersection	2021 Without Project				2021 With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Signalized Intersections								
Continental Drive/Scottsdale Road								
Overall Intersection	A	9.2	B	10.5	A	9.6	B	11.6
Eastbound Left	B	17.3	C	21.5	B	17.3	C	21.5
Eastbound Through	B	15.2	B	19.0	B	15.1	B	18.7
Eastbound Right	B	15.5	B	18.6	B	16.0	B	19.0
Westbound Left	B	16.2	C	20.2	B	16.2	C	20.0
Westbound Through/Right	B	16.0	C	20.1	B	15.9	B	19.8
Northbound Left	A	5.0	A	6.3	A	5.4	A	7.7
Northbound Through	A	8.6	A	9.0	A	8.9	A	9.3
Northbound Through/Right	A	9.7	A	9.9	A	10.0	B	10.3
Southbound Left	A	5.7	A	5.7	A	6.2	A	6.2
Southbound Through	A	7.0	A	9.7	A	7.8	B	11.5
Southbound Through/Right	A	7.4	B	11.0	A	8.3	B	13.2
Un-Signalized Intersections								
Circle K Driveway/Continental Drive								
Eastbound Left/Through/Right	A	7.4	A	7.5	N/A		N/A	
Eastbound Through/Right	N/A		N/A		A	0.0	A	0.0
Westbound Left/Through/Right	A	7.5	A	7.6	N/A		N/A	
Westbound Left/Through	N/A		N/A		A	7.6	A	7.6
Northbound Left/Through/Right	A	9.5	B	10.9	N/A		N/A	
Northbound Left/Right	N/A		N/A		A	9.6	B	10.4
Southbound Left/Through/Right	A	9.3	B	10.8	N/A		N/A	
North Access/Scottsdale Road								
Eastbound Left	N/A		N/A		E	36.3	F	>120
Eastbound Right					B	12.4	C	21.5
Westbound Left					F	52.5	F	114.9
Westbound Right					C	16.8	C	17.0
Northbound Left					B	12.4	D	29.5
Southbound Left					C	21.0	C	21.4
West Access/Continental Drive								
Southbound Left	N/A		N/A		B	10.1	B	10.9

Delay - seconds per vehicle

Turn Lane Analysis

A key element of this traffic analysis is to determine if right or left turn lanes are required at the intersections providing access to the project. The City of Scottsdale *Design Standards & Policies Manual, 2018*, states that "right-turn lanes are required at all street intersections (public or private) on major arterials."

When needed, turn lanes remove the slowing turning traffic from the through traffic stream, improving capacity and reducing rear-end crashes. **Table 9** shows the locations that were evaluated for right turn lanes based on traffic volumes in 2021 with the project.

Table 9 – Turn Lane Warrants

Intersection	Direction	Turn Treatment Analyzed	Guidelines Applied	Turn Treatments Warranted?
North Access/Scottsdale Road	Northbound	Left Turn Lane	Scottsdale	Yes
North Access/Scottsdale Road	Southbound	Right Turn Lane	Scottsdale	Yes
West Access/Continental Drive	Westbound	Right Turn Lane	Scottsdale	No

Table 9 shows that dedicated northbound left turn and southbound right turn lanes are warranted at the proposed intersection of North Access/Scottsdale Road.

Queue storage requirements of the warranted turn lanes were calculated using the following methods as recommended in *A Policy of Geometric Design of Highways and Streets* (AASHTO, 2011). For un-signalized intersections, storage for vehicles likely to arrive in an average two-minute period within the average weekday peak hour should be provided.

Vehicles per 2 min. period = (vehicles/hour) ÷ (30 periods/hour)
Storage length = vehicles per 2 min. period x 25 feet

Table 9 shows the calculated queue length for the warranted turn lanes based on 2021 weekday peak hour traffic volumes with traffic from the project. Additionally, the queue length for the eastbound left turning movement along North Access at Scottsdale Road was calculated to ensure adequate storage will be provided on site, as this movement is anticipated to experience delays in 2021 weekday peak hours with traffic from the project. The computed values are typically rounded to the nearest 25 feet.

Table 10 – Calculated Queue Lengths

Intersection	Left Turn Storage				Right Turn Storage			
	NB	SB	EB	WB	NB	SB	EB	WB
North Access/Scottsdale Road								
Turning Volume (vph)	13		28			45		
$S_{calculated}$ =	11		23			38		
$S_{rounded}$ =	25		25			50		

S - storage in feet, vph - vehicles per hour

As shown in **Table 10**, the minimum queue lengths required for the southbound right turn movement at the intersection of North Access/Scottsdale Road in 2021 with the project is 50 feet.

The northbound left turn lane warranted at North Access along Scottsdale Road will require a minimum storage length of 25 feet. The existing two-way, center left turn lane is expected to adequately accommodate left turning volumes at this intersection.

The eastbound approach to the intersection of North Access/Scottsdale Road will require a minimum throat distance of 25 feet to accommodate left turning vehicles exiting the proposed site.

Crash Analysis

Crash history for the Continental Drive/Scottsdale Road study intersection was obtained from the City of Scottsdale. Crash records from May 2013 to May 2018 were analyzed. Within this time period there were forty-nine (49) reported crashes that occurred at the intersection. Results of the crash analysis are shown in **Table 11**.

Angle and rear-end collisions make up the majority of the incidents at the signalized intersection of Continental Drive/Scottsdale Road. In the five year study period, ten (10) angle collisions and fifteen (15) rear-end collisions were reported.

Table 11 – Crash Analysis at Continental Drive/Scottsdale Road

Year	Crash Type							Fatal	Injury	Crash Totals
	Angle	Left Turn	Rear-End	Sideswipe	Single Vehicle	Head On	Other			
2013	3	1	5	0	3	2	0	0	1	14
2014	1	2	2	1	0	0	0	0	1	6
2015	1	2	1	0	1	1	0	0	1	6
2016	1	1	3	0	2	1	3	0	3	11
2017	4	0	4	0	2	0	1	0	0	11
2018	0	0	0	0	1	0	0	0	0	1
5-Year Total	**10**	**6**	**15**	**1**	**9**	**4**	**4**	**0**	**6**	**49**

A review of the crash data shows that nearly 30% of all crashes at the intersection of Continental Drive/Scottsdale Road were rear-end type. This can be attributed to large traffic volumes along Scottsdale Road combined with the presence of a traffic signal. Delays at the intersection of Continental Drive/Scottsdale Road may cause drivers to rush through the intersection, triggering rear-end crashes.

The next most common crash types, angle and single vehicle, are largely due to driver inattention or failure to yield the right-of-way. Approximately 40% of the angle crashes at the intersection of Continental Drive/Scottsdale Road were drivers striking bicyclists or pedestrians within the roadway. Though this can be attributed to driver inattention, it is likely that the presence of bike lanes along Scottsdale Road, north of Continental Drive, and the absence of bike lanes to the south has a negative effect on driver expectations regarding pedestrians and bikes in the roadway.

Approximately 150 feet north of the intersection of Continental Drive/Scottsdale Road, BIKE LANE ENDS signing is provided for southbound roadway users. As users approach the intersection, the solid white pavement marking for the bike lane transitions to "skip dash" white pavement marking to identify the end of the bike lane. This "skip dash" area is often seen by motorists as a "right turn pocket" and may be causing southbound right turning vehicles to encroach into the bike lane area.

It should be noted that this crash summary only includes crashes where a police officer was contacted and wrote a report, otherwise, there is no record of the incident. It is possible that there were other minor crashes along this road, however, as mentioned above, the Police Department was not contacted and no official record of these crashes exists. An expanded summary of the crash data can be found in the Appendix.

Mitigation

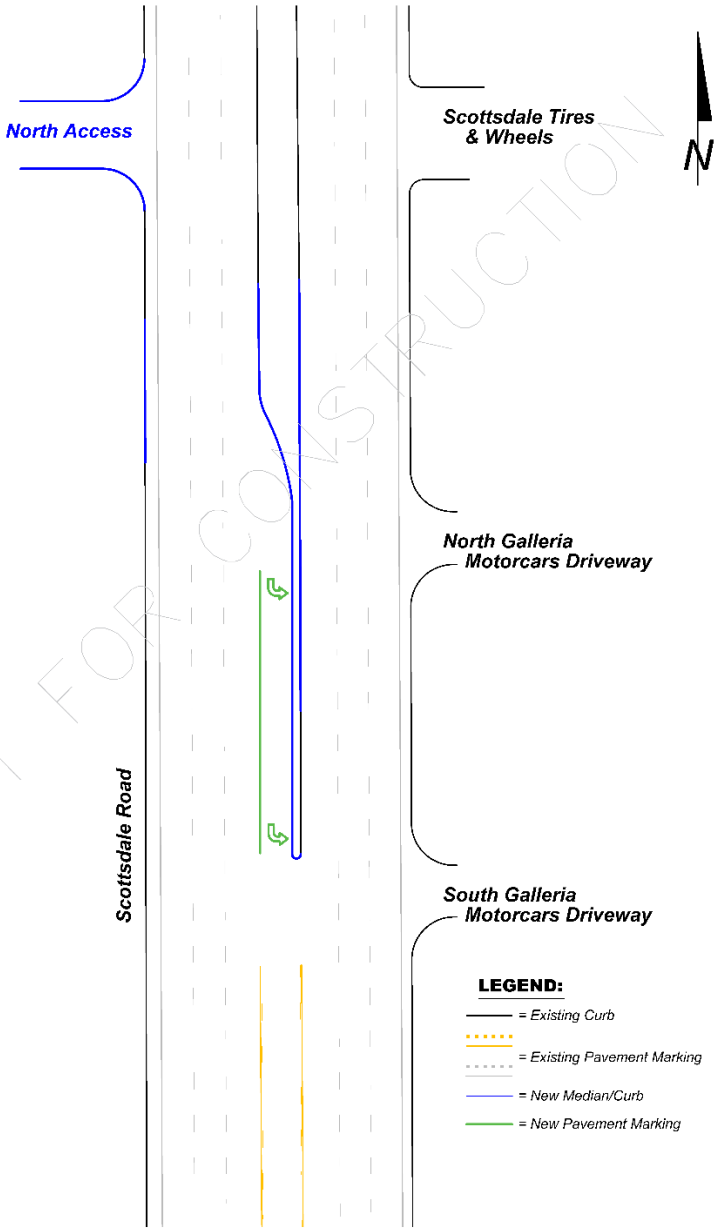
The intersection of North Access/Scottsdale Road is anticipated to experience delays for the eastbound left and westbound left turning movement in 2021 weekday peak hours with traffic from the Alta Continental project. The relatively large through volumes along Scottsdale Road in the weekday peak hours do not provide a sufficient number of adequate gaps for vehicles turning from the minor approaches (North Access). Minor approaches to major roadways, such as Scottsdale Road, tend to experience excessive delays for turning movements in un-signalized conditions.

Mitigation measures to address the eastbound left turn delay expected along North Access at Scottsdale Road are limited. However, it is anticipated that vehicles within the Alta Continental site that intend to travel northbound along Scottsdale Road will avoid the excessive delays at the intersection of North Access/Scottsdale Road and choose to travel to the intersection of Continental Drive/Scottsdale Road via West Access to complete their eastbound left turn movement at the existing traffic signal.

Per discussion with the City of Scottsdale, an alternative access configuration at the intersection of North Access/Scottsdale Road was reviewed. For the purposes of this report, it was assumed that the proposed Alta Continental North Access would align with the existing Scottsdale Tires & Wheels driveway on the east side of Scottsdale Road. The existing raised, concrete median will be 'cut back' to provide full access to both the proposed and existing sites at this access intersection.

The sketch for this second alternative, provided in **Figure 11** below, shows that the existing median would then be extended south, removing the full access provided at the North Galleria Motorcars Driveway. A new southbound left turn lane would be provided at the South Galleria Motorcars Driveway located approximately 330 feet south of the proposed North Access alignment. This alternative would encourage southbound U-Turn movements at this new median break and the vehicular conflict points associated with such U-Turns. While U-Turn movements are allowed along Scottsdale Road and likely currently occur, the removal of a full access driveway serving an existing business may not be possible due to political and economic concerns. It is recommended that the intersection of North Access/Scottsdale Road be configured as analyzed within this report.

Figure 11 – Alternative Access Configuration



Conclusion

When fully completed, the proposed Alta Continental project is predicted to generate an additional 2,182 vehicle trips per day (vtpd) on weekdays to the adjacent street system from the new project site. Fifty percent of these new trips (1,091 vehicle trips) will be into the project and fifty percent will be out of the project.

All of the study intersections currently operate at adequate LOS and are expected to continue doing so in 2021 without the project.

The proposed intersection of North Access/Scottsdale Road is anticipated to experience delays for the eastbound left and westbound left turning movement in the weekday peak hours in 2021 with traffic from the Alta Continental project. This delay is due to the large northbound and southbound through volumes on Scottsdale Road providing an inadequate number of acceptable gaps for vehicles turning from the minor approaches. Un-signalized minor street intersections along four or more lane, major streets such as Scottsdale Road, tend to have their left turn movements from the minor street operate at LOS E or F during the peak hours.

The remaining study intersections are expected to operate at adequate levels of service with the inclusion of the traffic generated by the Alta Continental site in 2021 with the project.

Dedicated northbound left turn and southbound right turn lanes are warranted at the proposed intersection of North Access/Scottsdale Road.

The southbound right turn movement at the intersection of North Access/Scottsdale Road in 2021 with the project will require a minimum storage length of 50 feet.

The northbound left turn lane warranted at North Access along Scottsdale Road will require a minimum storage length of 25 feet. The existing two-way, center left turn lane is expected to adequately accommodate left turning volumes at this intersection.

As the eastbound left turning movement at the intersection of North Access/Scottsdale Road is anticipated to experience delays in 2021 weekday peak hours with traffic from the project, the queue length for this eastbound left turning movement was calculated to ensure adequate storage will be provided on site.

The eastbound approach to the intersection of North Access/Scottsdale Road will require a minimum throat distance of 25 feet to accommodate left turning vehicles exiting the proposed site.

A review of the crash data shows that nearly 30% of all crashes at the intersection of Continental Drive/Scottsdale Road were rear-end type. This can be attributed to large traffic volumes along Scottsdale Road combined with the presence of a traffic signal. Delays at the intersection of Continental Drive/Scottsdale Road may cause drivers to rush through the intersection, triggering rear-end crashes.

Mitigation measures to address the eastbound left turn delay expected along North Access at Scottsdale Road are limited. However, it is anticipated that vehicles within the Alta Continental site that intend to travel northbound along Scottsdale Road will avoid the excessive delays at the intersection of North Access/Scottsdale Road and choose to travel to the intersection of Continental Drive/Scottsdale Road via West Access to complete their eastbound left turn movement at the existing traffic signal.

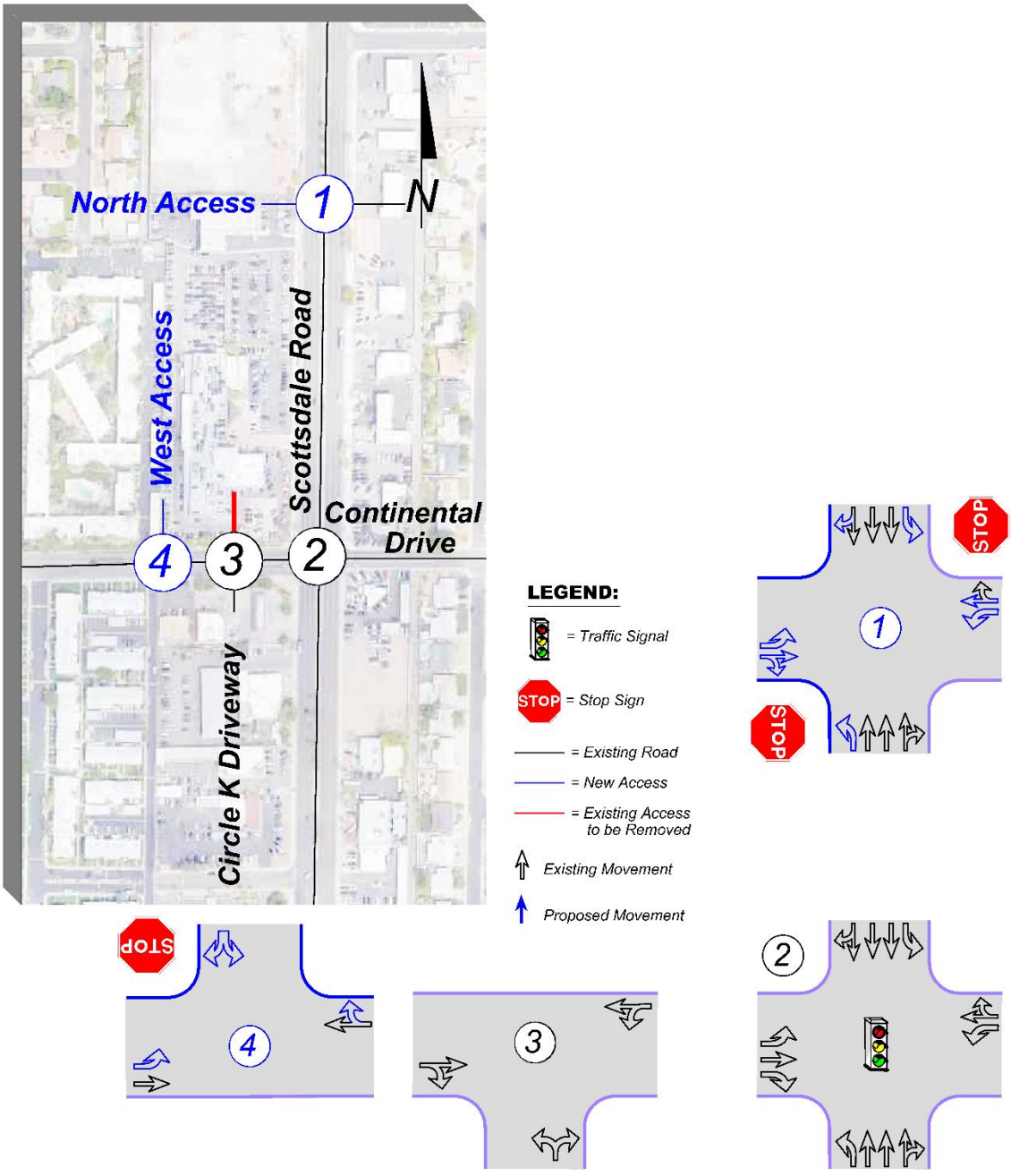
Per discussion with the City of Scottsdale, an alternative access configuration at the intersection of North Access/Scottsdale Road was reviewed. The existing median break south of the proposed North Access alignment could be closed – limiting both the Alta Continental North Access and the Scottsdale Tires & Wheels driveway to right-in/right-out only. The existing median would then be extended south, removing the full access provided at the North Galleria Motorcars Driveway. A new southbound left turn lane would be provided at the South Galleria Motorcars Driveway located approximately 330 feet south of the proposed North Access alignment. This alternative would encourage southbound U-Turn movements at this new median break and the vehicular conflict points associated with such U-Turns. While U-Turn movements are allowed along Scottsdale Road and likely currently occur, the removal of a full access driveway serving an existing business may not be possible due to political and economic concerns. It is recommended that the intersection of North Access/Scottsdale Road be configured as analyzed within this report.

Due to limited right-of-way immediately north of the proposed North Access, and the location of an existing driveway that serves the adjacent site (which would conflict with the right turn lane), the construction of a southbound right turn lane at this location is not recommended. Furthermore, while the southbound right turn lane is warranted based on City of Scottsdale guidelines, the installation of a right turn lane is not consistent with the character of Scottsdale Road in the vicinity of the project site and the southbound right tun movement is expected to operate at an adequate level of service without the turn lane.

The intersection of North Access/Scottsdale Road should be constructed to provide a minimum of 25 feet of storage for eastbound left turning vehicles.

Proposed lane configurations and traffic control are shown in **Figure 12**.

Figure 12 – Proposed Lane Configurations



TRAFFIC IMPACT ANALYSIS
ALTA CONTINENTAL
CONTINENTAL DRIVE/SCOTTSDALE ROAD

APPENDIX

Traffic Counts

Trip Generation Calculations

Capacity Calculations

Turn Lane Calculations

Crash Data

Comment Resolution

TRAFFIC IMPACT ANALYSIS
CONTINENTAL MIXED USE
CONTINENTAL DRIVE/SCOTTSDALE ROAD

APPENDIX

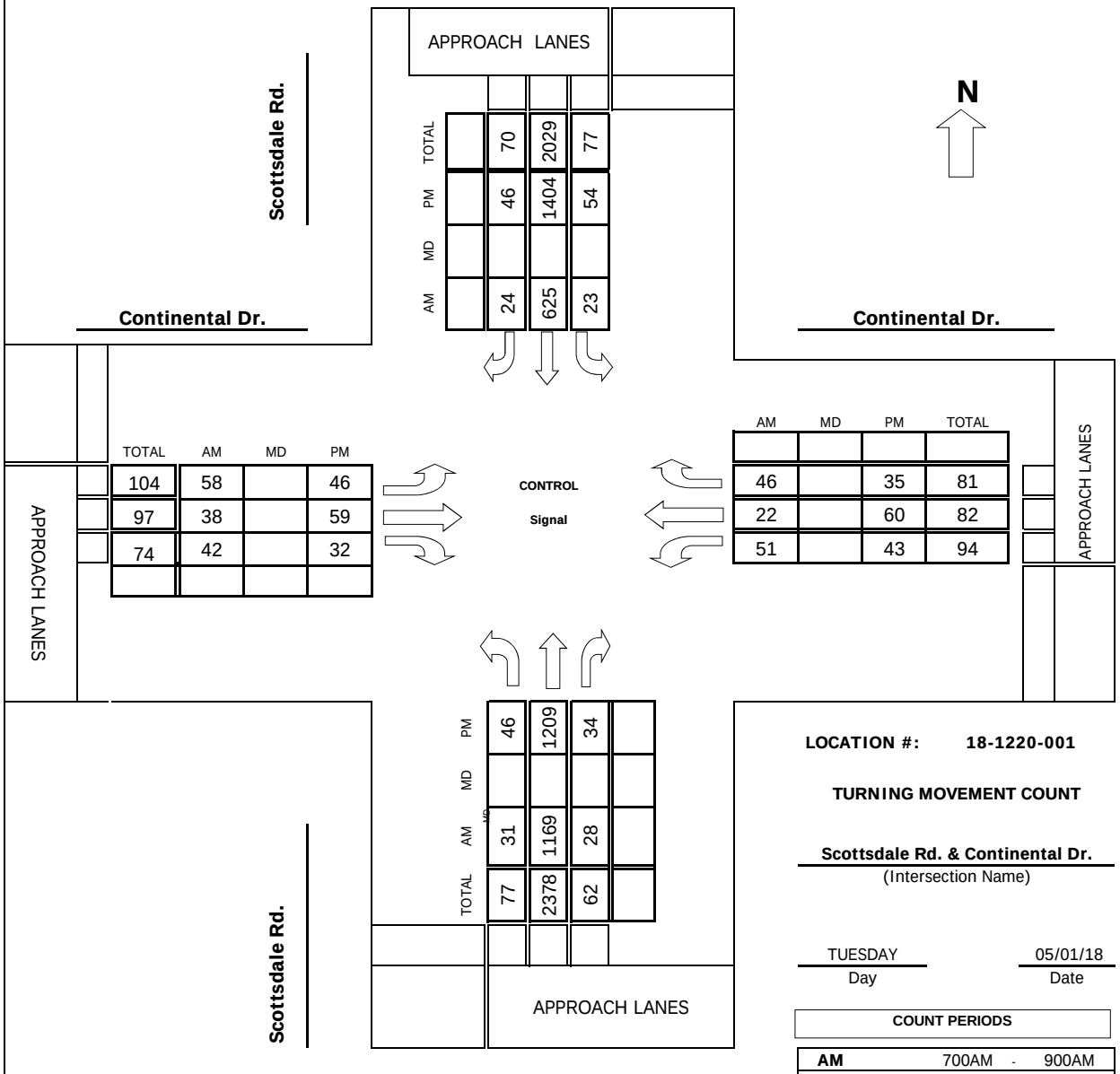
Traffic Counts

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1220-001

TMC SUMMARY OF Scottsdale Rd. & Continental Dr.



LOCATION #: 18-1220-001

TURNING MOVEMENT COUNT

Scottsdale Rd. & Continental Dr.
(Intersection Name)

TUESDAY (Day) 05/01/18 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR

PM PEAK HOUR 445 PM

14-ZN-2018
9/1/2020

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd.	DATE:	05/01/18	LOCATION:	Scottsdale
E-W STREET:	Continental Dr.	DAY:	TUESDAY	PROJECT#	18-1220-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	1	1	1	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	8	218	10	7	115	9	11	3	7	5	6	10	409
7:15 AM	5	253	6	3	121	3	9	10	13	15	5	12	455
7:30 AM	11	355	9	6	161	4	16	13	15	17	6	10	623
7:45 AM	5	281	7	7	167	7	9	12	8	10	5	11	529
8:00 AM	4	274	5	4	159	8	14	9	12	12	6	10	517
8:15 AM	11	259	7	6	138	5	19	4	7	12	5	15	488
8:30 AM	8	282	4	1	168	9	21	6	3	6	11	9	528
8:45 AM	7	208	5	5	159	8	11	7	6	6	17	11	450
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	59	2130	53	39	1188	53	110	64	71	83	61	88	3999
Approach %	2.63	95.00	2.36	3.05	92.81	4.14	44.90	26.12	28.98	35.78	26.29	37.93	
App/Depart	2242	/	2328	1280	/	1342	245	/	156	232	/	173	

AM Peak Hr Begins at: 730 AM

PEAK													
Volumes	31	1169	28	23	625	24	58	38	42	51	22	46	2157
Approach %	2.52	95.20	2.28	3.42	93.01	3.57	42.03	27.54	30.43	42.86	18.49	38.66	
PEAK HR. FACTOR:		0.819			0.928			0.784			0.902		0.866

CONTROL: Signal
COMMENT 1:
GPS: 33.458493, -111.926371

14-ZN-2018
9/1/2020

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Scottsdale Rd. 0	DATE:	05/01/18	LOCATION:	Scottsdale
E-W STREET:	Continental Dr.	DAY:	TUESDAY	PROJECT#	18-1220-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	1	1	1	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	6	265	11	16	301	17	11	18	5	9	9	16	684
4:15 PM	17	243	9	15	329	16	9	14	4	1	7	6	670
4:30 PM	7	296	6	13	353	5	16	19	5	6	10	5	741
4:45 PM	4	309	10	9	339	16	10	13	8	7	18	9	752
5:00 PM	15	300	8	11	363	8	16	15	6	12	18	12	784
5:15 PM	16	299	7	27	354	11	11	17	14	10	11	6	783
5:30 PM	11	301	9	7	348	11	9	14	4	14	13	8	749
5:45 PM	17	283	7	15	342	10	7	13	6	14	9	7	730
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	93	2296	67	113	2729	94	89	123	52	73	95	69	5893
Approach %	3.79	93.49	2.73	3.85	92.95	3.20	33.71	46.59	19.70	30.80	40.08	29.11	
App/Depart	2456	/	2454	2936	/	2854	264	/	303	237	/	282	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	46	1209	34	54	1404	46	46	59	32	43	60	35	3068
Approach %	3.57	93.79	2.64	3.59	93.35	3.06	33.58	43.07	23.36	31.16	43.48	25.36	
PEAK HR. FACTOR:		0.998			0.959			0.815			0.821		0.978

CONTROL:	Signal
COMMENT 1:	0
GPS:	33.458493, -111.926371

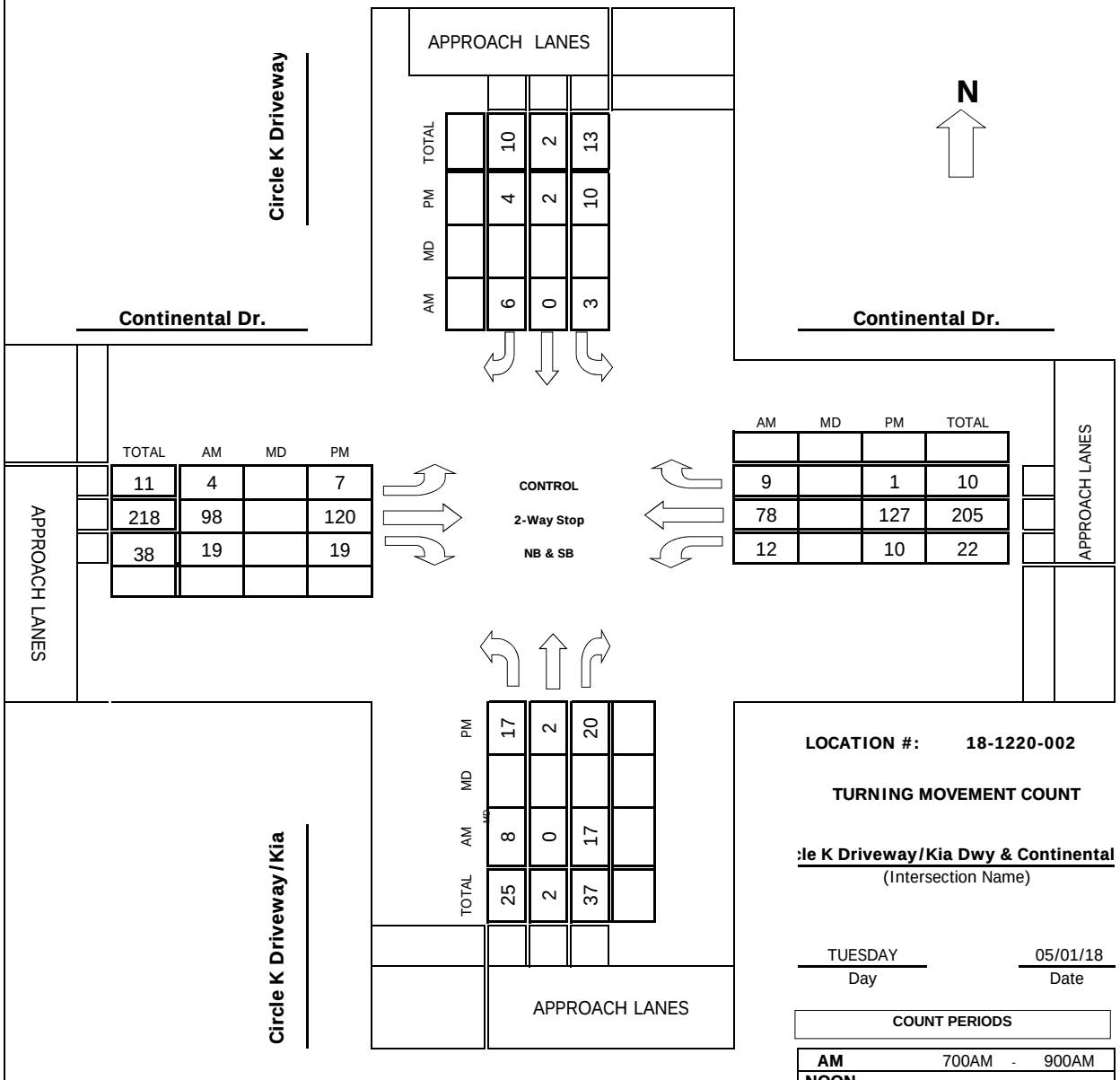
14-ZN-2018
9/1/2020

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1220-002

TMC SUMMARY OF Circle K Driveway/Kia Dwy & Continental Dr.



LOCATION #: 18-1220-002

TURNING MOVEMENT COUNT

cle K Driveway/Kia Dwy & Continental
(Intersection Name)

TUESDAY (Day) 05/01/18 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

14-ZN-2018
9/1/2020

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Circle K Driveway/Kia Dwy	DATE:	05/01/18	LOCATION:	Tempe
E-W STREET:	Continental Dr.	DAY:	TUESDAY	PROJECT#	18-1220-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	0	3	0	0	0	1	19	4	4	18	0	51
7:15 AM	2	0	6	0	0	0	0	26	11	2	11	0	58
7:30 AM	4	0	8	0	0	0	2	37	3	2	16	3	75
7:45 AM	4	0	2	0	0	0	2	26	2	1	13	2	52
8:00 AM	2	0	7	1	0	2	0	27	6	3	14	1	63
8:15 AM	3	0	1	0	0	1	1	28	7	5	14	2	62
8:30 AM	2	0	6	1	0	0	3	24	5	2	24	2	69
8:45 AM	1	0	3	1	0	3	0	19	1	2	26	4	60
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	20	0	36	3	0	6	9	206	39	21	136	14	490
Approach %	35.71	0.00	64.29	33.33	0.00	66.67	3.54	81.10	15.35	12.28	79.53	8.19	
App/Depart	56	/	23	9	/	60	254	/	245	171	/	162	

AM Peak Hr Begins at: 800 AM

PEAK													
Volumes	8	0	17	3	0	6	4	98	19	12	78	9	254
Approach %	32.00	0.00	68.00	33.33	0.00	66.67	3.31	80.99	15.70	12.12	78.79	9.09	
PEAK HR. FACTOR:	0.694			0.563			0.840			0.773			0.920

CONTROL: 2-Way Stop (NB & SB)
COMMENT 1:
GPS: 33.458475, -111.927049

14-ZN-2018
9/1/2020

Intersection Turning Movement

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET:	Circle K Driveway/Kia Dwy 0	DATE:	05/01/18	LOCATION:	Tempe
E-W STREET:	Continental Dr.	DAY:	TUESDAY	PROJECT#	18-1220-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	0	5	0	0	0	0	30	8	1	31	0	78
4:15 PM	7	1	2	0	1	1	0	25	9	2	36	3	87
4:30 PM	3	2	5	1	1	1	2	35	4	1	19	1	75
4:45 PM	5	0	7	2	1	1	2	21	5	0	38	0	82
5:00 PM	2	0	6	4	0	1	0	27	5	5	35	0	85
5:15 PM	7	0	2	3	0	1	3	37	5	4	35	0	97
5:30 PM	7	0	6	1	1	1	0	19	4	3	29	3	74
5:45 PM	6	1	2	0	2	1	0	24	4	1	35	1	77
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	40	4	35	11	6	7	7	218	44	17	258	8	655
Approach %	50.63	5.06	44.30	45.83	25.00	29.17	2.60	81.04	16.36	6.01	91.17	2.83	
App/Depart	79	/	19	24	/	67	269	/	264	283	/	305	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	17	2	20	10	2	4	7	120	19	10	127	1	339
Approach %	43.59	5.13	51.28	62.50	12.50	25.00	4.79	82.19	13.01	7.25	92.03	0.72	
PEAK HR. FACTOR:		0.813			0.800			0.811			0.863		0.874

CONTROL:	2-Way Stop (NB & SB)
COMMENT 1:	0
GPS:	33.458475, -111.927049

14-ZN-2018
9/1/2020

TRAFFIC IMPACT ANALYSIS
CONTINENTAL MIXED USE
CONTINENTAL DRIVE/SCOTTSDALE ROAD

APPENDIX

Trip Generation Calculations

Variety Store

LAND USE: 10,125 Square Feet Variety Store

TRIP GENERATION CALCULATIONS ARE BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS' TRIP GENERATION, 10TH EDITION. THE ITE LAND USE CODE IS Variety Store (814), General Urban/Suburban

WEEKDAY

Average Rate = 63.47 Trips per 1000 Square Feet (sqft)

T = 63.47 Trips x 10125 sqft / 1000

T = 644 VTPD

ENTER: (0.5)*(644) = **322 VTPD**

EXIT: (0.5)*(644) = **322 VTPD**

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

Average Rate = 3.18 Trips per 1000 Square Feet (sqft)

T = 3.18 Trips x 10125 sqft / 1000

T = 33 VPH

ENTER: (0.57)*(33) = **19 VPH**

EXIT: (0.43)*(33) = **14 VPH**

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

Average Rate = 6.84 Trips per 1000 Square Feet (sqft)

T = 6.84 Trips x 10125 sqft / 1000

T = 70 VPH

ENTER: (0.52)*(70) = **36 VPH**

EXIT: (0.48)*(70) = **34 VPH**

*where, T = trip ends

TRIP GENERATION SUMMARY

WEEKDAY	**644 VTPD**
AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)	**33 VPH**
PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)	**70 VPH**

Multifamiy Housing, Mid-Rise

LAND USE: 281 Dwelling Units Multifamiy Housing, Mid-Rise

TRIP GENERATION CALCULATIONS ARE BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS' TRIP GENERATION, 10TH EDITION. THE ITE LAND USE CODE IS Multifamiy Housing, Mid-Rise (221), General Urban/Suburban

WEEKDAY

Average Rate = 5.44 Trips per Dwelling Unit (d.u.)

T = 5.44 Trips x 281 d.u.

T = 1,530 VTPD

ENTER: (0.5)*(1530) = **765 VTPD**

EXIT: (0.5)*(1530) = **765 VTPD**

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

Average Rate = 0.36 Trips per Dwelling Unit (d.u.)

T = 0.36 Trips x 281 d.u.

T = 102 VPH

ENTER: (0.26)*(102) = **27 VPH**

EXIT: (0.74)*(102) = **75 VPH**

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

Average Rate = 0.44 Trips per Dwelling Unit (d.u.)

T = 0.44 Trips x 281 d.u.

T = 124 VPH

ENTER: (0.61)*(124) = **76 VPH**

EXIT: (0.39)*(124) = **48 VPH**

*where, T = trip ends

TRIP GENERATION SUMMARY

WEEKDAY	**1,530 VTPD**
AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)	**102 VPH**
PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)	**124 VPH**

Automobile Sales (New)

LAND USE: 20,900 Square Feet Automobile Sales (New)

TRIP GENERATION CALCULATIONS ARE BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS' TRIP GENERATION, 10TH EDITION. THE ITE LAND USE CODE IS Automobile Sales (New) (840), General Urban/Suburban

WEEKDAY

Average Rate = 27.84 Trips per 1000 Square Feet (sqft)

T = 27.84 Trips x 20900 sqft / 1000

T = 582 VTPD

ENTER: (0.5)*(581.856) = **291 VTPD**

EXIT: (0.5)*(581.856) = **291 VTPD**

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

Average Rate = 1.87 Trips per 1000 Square Feet (sqft)

T = 1.87 Trips x 20900 sqft / 1000

T = 40 VPH

ENTER: (0.73)*(40) = **29 VPH**

EXIT: (0.27)*(40) = **11 VPH**

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

Average Rate = 2.43 Trips per 1000 Square Feet (sqft)

T = 2.43 Trips x 20900 sqft / 1000

T = 51 VPH

ENTER: (0.4)*(51) = **20 VPH**

EXIT: (0.6)*(51) = **31 VPH**

*where, T = trip ends

TRIP GENERATION SUMMARY

WEEKDAY	**582 VTPD**
AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)	**40 VPH**
PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)	**51 VPH**

Tire Store

LAND USE: 3,800 Square Feet Tire Store

TRIP GENERATION CALCULATIONS ARE BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS' TRIP GENERATION, 10TH EDITION. THE ITE LAND USE CODE IS
Tire Store (848), General Urban/Suburban

Weekday

Average Rate = 28.52 Trips per 1000 Square Feet (Sq. Ft.)
T = 28.52 Trips x 3800 Sq. Ft. / 1000

		T =	**110 VTPD**
ENTER:	(0.5)*(110) =		**55 VTPD**
EXIT:	(0.5)*(110) =		**55 VTPD**

AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)

Average Rate = 2.72 Trips per 1000 Square Feet (Sq. Ft.)
T = 2.72 Trips x 3800 Sq. Ft. / 1000

		T =	**11 VPH**
ENTER:	(0.64)*(11) =		**7 VPH**
EXIT:	(0.36)*(11) =		**4 VPH**

PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)

Average Rate = 3.98 Trips per 1000 Square Feet (Sq. Ft.)
T = 3.98 Trips x 3800 Sq. Ft. / 1000

		T =	**16 VPH**
ENTER:	(0.43)*(16) =		**7 VPH**
EXIT:	(0.57)*(16) =		**9 VPH**

*where, T = trip ends

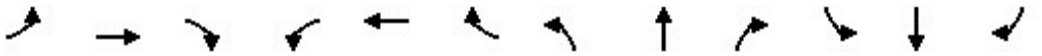
TRIP GENERATION SUMMARY

SATURDAY	**110 VTPD**
AM PEAK HOUR (ONE HOUR BETWEEN 7 AND 9 AM)	**11 VPH**
PM PEAK HOUR (ONE HOUR BETWEEN 4 AND 6 PM)	**16 VPH**

TRAFFIC IMPACT ANALYSIS
CONTINENTAL MIXED USE
CONTINENTAL DRIVE/SCOTTSDALE ROAD

APPENDIX

Capacity Calculations



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	40	44	53	23	48	32	1216	29	24	650	25
Future Volume (veh/h)	60	40	44	53	23	48	32	1216	29	24	650	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	43	48	58	25	52	35	1322	32	26	707	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	318	274	232	344	79	165	534	2492	60	359	2408	92
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.49	0.49	0.03	0.48	0.48
Sat Flow, veh/h	1322	1870	1585	1306	541	1126	1781	5128	124	1781	5048	192
Grp Volume(v), veh/h	65	43	48	58	0	77	35	878	476	26	476	258
Grp Sat Flow(s),veh/h/ln	1322	1870	1585	1306	0	1668	1781	1702	1848	1781	1702	1836
Q Serve(g_s), s	1.9	0.8	1.1	1.6	0.0	1.7	0.4	7.2	7.2	0.3	3.4	3.4
Cycle Q Clear(g_c), s	3.5	0.8	1.1	2.4	0.0	1.7	0.4	7.2	7.2	0.3	3.4	3.4
Prop In Lane	1.00		1.00	1.00		0.68	1.00		0.07	1.00		0.10
Lane Grp Cap(c), veh/h	318	274	232	344	0	244	534	1654	898	359	1624	876
V/C Ratio(X)	0.20	0.16	0.21	0.17	0.00	0.32	0.07	0.53	0.53	0.07	0.29	0.29
Avail Cap(c_a), veh/h	1756	2307	1955	1763	0	2057	840	1654	898	636	1624	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	15.0	15.1	16.0	0.0	15.3	4.9	7.1	7.1	5.5	6.4	6.4
Incr Delay (d2), s/veh	0.3	0.3	0.4	0.2	0.0	0.7	0.1	1.2	2.2	0.1	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.3	0.4	0.4	0.0	0.6	0.1	2.0	2.4	0.1	0.9	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	15.2	15.5	16.3	0.0	16.1	5.0	8.4	9.4	5.6	6.8	7.2
LnGrp LOS	B	B	B	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		156			135			1389			760	
Approach Delay, s/veh		16.1			16.1			8.6			6.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	24.0		10.4	6.1	23.6		10.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	7.5	19.5		49.5	8.5	18.5		49.5				
Max Q Clear Time (g_c+I1), s	2.3	9.2		5.5	2.4	5.4		4.4				
Green Ext Time (p_c), s	0.0	6.2		0.6	0.0	3.9		0.7				

Intersection Summary		
HCM 6th Ctrl Delay	9.0	
HCM 6th LOS	A	

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	102	19	12	81	9	8	0	17	3	0	6
Future Vol, veh/h	4	102	19	12	81	9	8	0	17	3	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	111	21	13	88	10	9	0	18	3	0	7

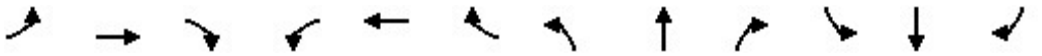
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	98	0	0	132	0	0	253	254	122	258	259	93
Stage 1	-	-	-	-	-	-	130	130	-	119	119	-
Stage 2	-	-	-	-	-	-	123	124	-	139	140	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1495	-	-	1453	-	-	700	650	929	695	645	964
Stage 1	-	-	-	-	-	-	874	789	-	885	797	-
Stage 2	-	-	-	-	-	-	881	793	-	864	781	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1495	-	-	1453	-	-	689	642	929	675	637	964
Mov Cap-2 Maneuver	-	-	-	-	-	-	689	642	-	675	637	-
Stage 1	-	-	-	-	-	-	871	787	-	882	790	-
Stage 2	-	-	-	-	-	-	867	786	-	844	779	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.9	9.5	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	836	1495	-	-	1453	-	-	844
HCM Lane V/C Ratio	0.033	0.003	-	-	0.009	-	-	0.012
HCM Control Delay (s)	9.5	7.4	0	-	7.5	0	-	9.3
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

HCM 6th Signalized Intersection Summary
3: Scottsdale Road & Continental Drive/Roosevelt Street

07/30/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	61	33	45	62	36	48	1258	35	56	1461	48
Future Volume (veh/h)	48	61	33	45	62	36	48	1258	35	56	1461	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	66	36	49	67	39	52	1367	38	61	1588	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	263	271	230	294	161	94	335	2662	74	383	2677	88
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.05	0.52	0.52	0.06	0.53	0.53
Sat Flow, veh/h	1288	1870	1585	1293	1109	645	1781	5107	142	1781	5078	166
Grp Volume(v), veh/h	52	66	36	49	0	106	52	911	494	61	1064	576
Grp Sat Flow(s),veh/h/ln	1288	1870	1585	1293	0	1754	1781	1702	1845	1781	1702	1840
Q Serve(g_s), s	1.9	1.5	1.0	1.7	0.0	2.7	0.6	8.6	8.6	0.7	10.5	10.5
Cycle Q Clear(g_c), s	4.6	1.5	1.0	3.2	0.0	2.7	0.6	8.6	8.6	0.7	10.5	10.5
Prop In Lane	1.00		1.00	1.00		0.37	1.00		0.08	1.00		0.09
Lane Grp Cap(c), veh/h	263	271	230	294	0	255	335	1775	962	383	1794	970
V/C Ratio(X)	0.20	0.24	0.16	0.17	0.00	0.42	0.16	0.51	0.51	0.16	0.59	0.59
Avail Cap(c_a), veh/h	1248	1702	1442	1283	0	1596	734	1775	962	517	1794	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	18.5	18.3	20.0	0.0	19.0	5.9	7.7	7.7	5.4	8.0	8.0
Incr Delay (d2), s/veh	0.4	0.5	0.3	0.3	0.0	1.1	0.2	1.1	2.0	0.2	1.5	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.6	0.3	0.5	0.0	1.1	0.2	2.5	3.0	0.2	3.1	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	19.0	18.6	20.2	0.0	20.1	6.1	8.7	9.6	5.6	9.4	10.6
LnGrp LOS	C	B	B	C	A	C	A	A	A	A	A	B
Approach Vol, veh/h		154			155			1457			1701	
Approach Delay, s/veh		19.7			20.1			8.9			9.7	
Approach LOS		B			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	30.0		11.6	7.0	30.3		11.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	25.5		44.5	13.5	18.5		44.5				
Max Q Clear Time (g_c+I1), s	2.7	10.6		6.6	2.6	12.5		5.2				
Green Ext Time (p_c), s	0.0	8.3		0.6	0.1	4.6		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			10.3									
HCM 6th LOS			B									

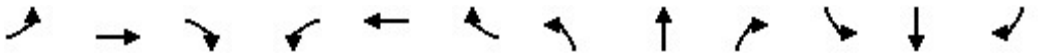
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	125	19	10	132	1	17	2	20	10	2	4
Future Vol, veh/h	7	125	19	10	132	1	17	2	20	10	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	136	21	11	143	1	18	2	22	11	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	144	0	0	157	0	0	332	329	147	341	339	144
Stage 1	-	-	-	-	-	-	163	163	-	166	166	-
Stage 2	-	-	-	-	-	-	169	166	-	175	173	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1438	-	-	1423	-	-	621	590	900	613	582	903
Stage 1	-	-	-	-	-	-	839	763	-	836	761	-
Stage 2	-	-	-	-	-	-	833	761	-	827	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1438	-	-	1423	-	-	610	582	900	590	574	903
Mov Cap-2 Maneuver	-	-	-	-	-	-	610	582	-	590	574	-
Stage 1	-	-	-	-	-	-	834	758	-	831	755	-
Stage 2	-	-	-	-	-	-	820	755	-	800	751	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	10.2	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	729	1438	-	-	1423	-	-	644
HCM Lane V/C Ratio	0.058	0.005	-	-	0.008	-	-	0.027
HCM Control Delay (s)	10.2	7.5	0	-	7.5	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	40	45	54	24	49	33	1241	30	25	663	26
Future Volume (veh/h)	62	40	45	54	24	49	33	1241	30	25	663	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	43	49	59	26	53	36	1349	33	27	721	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	279	236	347	82	167	528	2479	61	353	2395	93
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.48	0.48	0.03	0.47	0.47
Sat Flow, veh/h	1320	1870	1585	1304	549	1120	1781	5126	125	1781	5044	195
Grp Volume(v), veh/h	67	43	49	59	0	79	36	896	486	27	486	263
Grp Sat Flow(s),veh/h/ln	1320	1870	1585	1304	0	1669	1781	1702	1848	1781	1702	1835
Q Serve(g_s), s	1.9	0.8	1.1	1.7	0.0	1.7	0.4	7.4	7.4	0.3	3.5	3.5
Cycle Q Clear(g_c), s	3.6	0.8	1.1	2.5	0.0	1.7	0.4	7.4	7.4	0.3	3.5	3.5
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	320	279	236	347	0	249	528	1646	894	353	1616	871
V/C Ratio(X)	0.21	0.15	0.21	0.17	0.00	0.32	0.07	0.54	0.54	0.08	0.30	0.30
Avail Cap(c_a), veh/h	1743	2296	1946	1754	0	2049	830	1646	894	627	1616	871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	14.9	15.1	16.0	0.0	15.3	5.0	7.3	7.3	5.6	6.5	6.5
Incr Delay (d2), s/veh	0.3	0.3	0.4	0.2	0.0	0.7	0.1	1.3	2.4	0.1	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.3	0.4	0.4	0.0	0.6	0.1	2.1	2.5	0.1	1.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	15.2	15.5	16.2	0.0	16.0	5.0	8.6	9.7	5.7	7.0	7.4
LnGrp LOS	B	B	B	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		159			138			1418			776	
Approach Delay, s/veh		16.2			16.1			8.9			7.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	24.0		10.5	6.2	23.6		10.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	7.5	19.5		49.5	8.5	18.5		49.5				
Max Q Clear Time (g_c+I1), s	2.3	9.4		5.6	2.4	5.5		4.5				
Green Ext Time (p_c), s	0.0	6.2		0.6	0.0	4.0		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			9.2									
HCM 6th LOS			A									

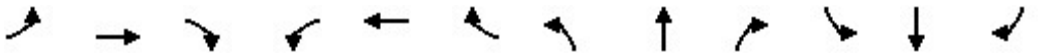
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	104	19	12	83	9	8	0	17	3	0	6
Future Vol, veh/h	4	104	19	12	83	9	8	0	17	3	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	113	21	13	90	10	9	0	18	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	134	0	0	257	258	124	262	263	95
Stage 1	-	-	-	-	-	-	132	132	-	121	121	-
Stage 2	-	-	-	-	-	-	125	126	-	141	142	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1493	-	-	1451	-	-	696	646	927	691	642	962
Stage 1	-	-	-	-	-	-	871	787	-	883	796	-
Stage 2	-	-	-	-	-	-	879	792	-	862	779	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1493	-	-	1451	-	-	685	638	927	671	634	962
Mov Cap-2 Maneuver	-	-	-	-	-	-	685	638	-	671	634	-
Stage 1	-	-	-	-	-	-	868	785	-	880	789	-
Stage 2	-	-	-	-	-	-	865	785	-	842	777	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.9	9.5	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	833	1493	-	-	1451	-	-	840
HCM Lane V/C Ratio	0.033	0.003	-	-	0.009	-	-	0.012
HCM Control Delay (s)	9.5	7.4	0	-	7.5	0	-	9.3
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	63	34	46	64	37	49	1283	36	57	1490	49
Future Volume (veh/h)	49	63	34	46	64	37	49	1283	36	57	1490	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	68	37	50	70	40	53	1395	39	62	1620	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	264	277	235	296	166	95	329	2649	74	376	2664	87
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.05	0.52	0.52	0.06	0.52	0.52
Sat Flow, veh/h	1283	1870	1585	1289	1117	638	1781	5106	143	1781	5078	166
Grp Volume(v), veh/h	53	68	37	50	0	110	53	930	504	62	1086	587
Grp Sat Flow(s),veh/h/ln	1283	1870	1585	1289	0	1755	1781	1702	1845	1781	1702	1840
Q Serve(g_s), s	1.9	1.6	1.0	1.8	0.0	2.8	0.6	8.9	8.9	0.7	10.9	10.9
Cycle Q Clear(g_c), s	4.7	1.6	1.0	3.3	0.0	2.8	0.6	8.9	8.9	0.7	10.9	10.9
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.08	1.00		0.09
Lane Grp Cap(c), veh/h	264	277	235	296	0	260	329	1766	957	376	1786	965
V/C Ratio(X)	0.20	0.25	0.16	0.17	0.00	0.42	0.16	0.53	0.53	0.16	0.61	0.61
Avail Cap(c_a), veh/h	1235	1694	1435	1272	0	1590	725	1766	957	508	1786	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	18.5	18.2	20.0	0.0	19.0	6.1	7.8	7.8	5.5	8.2	8.2
Incr Delay (d2), s/veh	0.4	0.5	0.3	0.3	0.0	1.1	0.2	1.1	2.1	0.2	1.6	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.4	0.5	0.0	1.1	0.2	2.6	3.1	0.2	3.2	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	19.0	18.6	20.2	0.0	20.1	6.3	9.0	9.9	5.7	9.7	11.0
LnGrp LOS	C	B	B	C	A	C	A	A	A	A	A	B
Approach Vol, veh/h		158			160			1487			1735	
Approach Delay, s/veh		19.7			20.1			9.2			10.0	
Approach LOS		B			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	30.0		11.8	7.1	30.3		11.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	25.5		44.5	13.5	18.5		44.5				
Max Q Clear Time (g_c+I1), s	2.7	10.9		6.7	2.6	12.9		5.3				
Green Ext Time (p_c), s	0.0	8.4		0.7	0.1	4.4		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			10.5									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	127	19	10	135	1	17	2	20	10	2	4
Future Vol, veh/h	7	127	19	10	135	1	17	2	20	10	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	138	21	11	147	1	18	2	22	11	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	148	0	0	159	0	0	338	335	149	347	345	148
Stage 1	-	-	-	-	-	-	165	165	-	170	170	-
Stage 2	-	-	-	-	-	-	173	170	-	177	175	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1434	-	-	1420	-	-	616	585	898	607	578	899
Stage 1	-	-	-	-	-	-	837	762	-	832	758	-
Stage 2	-	-	-	-	-	-	829	758	-	825	754	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1434	-	-	1420	-	-	605	577	898	585	570	899
Mov Cap-2 Maneuver	-	-	-	-	-	-	605	577	-	585	570	-
Stage 1	-	-	-	-	-	-	832	757	-	827	752	-
Stage 2	-	-	-	-	-	-	816	752	-	798	749	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	10.3	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	724	1434	-	-	1420	-	-	639
HCM Lane V/C Ratio	0.059	0.005	-	-	0.008	-	-	0.027
HCM Control Delay (s)	10.3	7.5	0	-	7.6	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

HCM 6th Signalized Intersection Summary
3: Scottsdale Road & Continental Drive/Roosevelt Street

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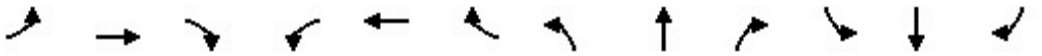

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	40	72	54	24	49	55	1246	30	25	704	26
Future Volume (veh/h)	69	40	72	54	24	49	55	1246	30	25	704	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	75	43	78	59	26	53	60	1354	33	27	765	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	296	251	352	87	177	525	2460	60	348	2284	83
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.48	0.48	0.03	0.45	0.45
Sat Flow, veh/h	1320	1870	1585	1270	549	1120	1781	5127	125	1781	5057	185
Grp Volume(v), veh/h	75	43	78	59	0	79	60	899	488	27	514	279
Grp Sat Flow(s),veh/h/ln	1320	1870	1585	1270	0	1669	1781	1702	1848	1781	1702	1837
Q Serve(g_s), s	2.2	0.8	1.8	1.7	0.0	1.7	0.7	7.6	7.6	0.3	4.0	4.0
Cycle Q Clear(g_c), s	3.9	0.8	1.8	2.5	0.0	1.7	0.7	7.6	7.6	0.3	4.0	4.0
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.07	1.00		0.10
Lane Grp Cap(c), veh/h	329	296	251	352	0	264	525	1633	887	348	1538	830
V/C Ratio(X)	0.23	0.15	0.31	0.17	0.00	0.30	0.11	0.55	0.55	0.08	0.33	0.34
Avail Cap(c_a), veh/h	1716	2261	1916	1686	0	2017	787	1633	887	616	1538	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	14.9	15.3	15.9	0.0	15.2	5.3	7.5	7.5	6.1	7.3	7.3
Incr Delay (d2), s/veh	0.3	0.2	0.7	0.2	0.0	0.6	0.1	1.3	2.5	0.1	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.6	0.4	0.0	0.6	0.2	2.2	2.6	0.1	1.1	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	15.1	16.0	16.2	0.0	15.9	5.4	8.9	10.0	6.2	7.8	8.3
LnGrp LOS	B	B	B	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		196			138			1447			820	
Approach Delay, s/veh		16.3			16.0			9.1			8.0	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	24.2		11.0	7.0	23.0		11.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	7.5	19.5		49.5	8.5	18.5		49.5				
Max Q Clear Time (g_c+I1), s	2.3	9.6		5.9	2.7	6.0		4.5				
Green Ext Time (p_c), s	0.0	6.2		0.7	0.0	4.2		0.7				

Intersection Summary		
HCM 6th Ctrl Delay	9.6	
HCM 6th LOS	A	

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	0	27	2	0	2	5	1359	4	3	714	19
Future Vol, veh/h	28	0	27	2	0	2	5	1359	4	3	714	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	100	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	29	2	0	2	5	1477	4	3	776	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1394	2284	399	1805	2292	741	797	0	0	1481	0	0
Stage 1	793	793	-	1489	1489	-	-	-	-	-	-	-
Stage 2	601	1491	-	316	803	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	149	39	513	84	39	308	490	-	-	228	-	-
Stage 1	277	398	-	90	186	-	-	-	-	-	-	-
Stage 2	414	185	-	614	394	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	145	38	513	78	38	308	490	-	-	228	-	-
Mov Cap-2 Maneuver	145	38	-	78	38	-	-	-	-	-	-	-
Stage 1	274	393	-	89	184	-	-	-	-	-	-	-
Stage 2	407	183	-	571	389	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.6	34.7	0	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	490	-	-	145	513	78	308	228	-	-
HCM Lane V/C Ratio	0.011	-	-	0.21	0.057	0.028	0.007	0.014	-	-
HCM Control Delay (s)	12.4	-	-	36.3	12.4	52.5	16.8	21	-	-
HCM Lane LOS	B	-	-	E	B	F	C	C	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.2	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	19	12	105	8	17
Future Vol, veh/h	138	19	12	105	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	150	21	13	114	9	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	171	0	301	161
Stage 1	-	-	-	-	161	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1406	-	691	884
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	887	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1406	-	684	884
Mov Cap-2 Maneuver	-	-	-	-	684	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	878	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	808	-	-	1406	-
HCM Lane V/C Ratio	0.034	-	-	0.009	-
HCM Control Delay (s)	9.6	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	123	91	22	34	0
Future Vol, veh/h	0	123	91	22	34	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	134	99	24	37	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	123	0	-	0	245	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1464	-	-	-	743	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	892	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1464	-	-	-	743	942
Mov Cap-2 Maneuver	-	-	-	-	743	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	892	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1464	-	-	-	743
HCM Lane V/C Ratio	-	-	-	-	0.05
HCM Control Delay (s)	0	-	-	-	10.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th Signalized Intersection Summary
3: Scottsdale Road & Continental Drive/Roosevelt Street

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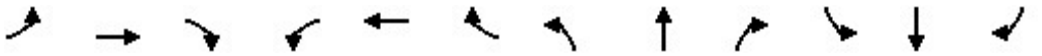

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	61	59	46	64	37	103	1296	36	57	1515	49
Future Volume (veh/h)	56	61	59	46	64	37	103	1296	36	57	1515	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	66	64	50	70	40	112	1409	39	62	1647	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	292	247	303	174	100	358	2625	73	369	2503	81
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.08	0.51	0.51	0.06	0.49	0.49
Sat Flow, veh/h	1283	1870	1585	1260	1117	638	1781	5108	141	1781	5082	163
Grp Volume(v), veh/h	61	66	64	50	0	110	112	939	509	62	1103	597
Grp Sat Flow(s),veh/h/ln	1283	1870	1585	1260	0	1755	1781	1702	1845	1781	1702	1841
Q Serve(g_s), s	2.2	1.5	1.8	1.8	0.0	2.8	1.4	9.2	9.2	0.8	12.1	12.1
Cycle Q Clear(g_c), s	5.0	1.5	1.8	3.3	0.0	2.8	1.4	9.2	9.2	0.8	12.1	12.1
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.08	1.00		0.09
Lane Grp Cap(c), veh/h	273	292	247	303	0	274	358	1750	948	369	1677	907
V/C Ratio(X)	0.22	0.23	0.26	0.17	0.00	0.40	0.31	0.54	0.54	0.17	0.66	0.66
Avail Cap(c_a), veh/h	1224	1678	1422	1236	0	1574	702	1750	948	499	1677	907
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	18.3	18.4	19.8	0.0	18.9	7.3	8.1	8.1	6.0	9.4	9.5
Incr Delay (d2), s/veh	0.4	0.4	0.5	0.3	0.0	0.9	0.5	1.2	2.2	0.2	2.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	0.6	0.5	0.0	1.1	0.4	2.8	3.3	0.2	3.8	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	18.7	19.0	20.0	0.0	19.8	7.7	9.3	10.3	6.2	11.5	13.2
LnGrp LOS	C	B	B	C	A	B	A	A	B	A	B	B
Approach Vol, veh/h		191			160			1560			1762	
Approach Delay, s/veh		19.7			19.9			9.5			11.9	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	30.0		12.2	8.4	28.9		12.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	25.5		44.5	13.5	18.5		44.5				
Max Q Clear Time (g_c+I1), s	2.8	11.2		7.0	3.4	14.1		5.3				
Green Ext Time (p_c), s	0.0	8.4		0.8	0.2	3.6		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		11.6	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	0	25	5	0	4	13	1376	4	3	1596	45
Future Vol, veh/h	25	0	25	5	0	4	13	1376	4	3	1596	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	100	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	27	5	0	4	14	1496	4	3	1735	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2392	3294	892	2226	3316	750	1784	0	0	1500	0	0
Stage 1	1766	1766	-	1526	1526	-	-	-	-	-	-	-
Stage 2	626	1528	-	700	1790	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	36	9	245	46	8	304	161	-	-	223	-	-
Stage 1	57	135	-	85	178	-	-	-	-	-	-	-
Stage 2	400	178	-	360	132	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	8	245	38	7	304	161	-	-	223	-	-
Mov Cap-2 Maneuver	33	8	-	38	7	-	-	-	-	-	-	-
Stage 1	52	133	-	78	163	-	-	-	-	-	-	-
Stage 2	360	163	-	316	130	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	150.4	71.4	0.3	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	161	-	-	33	245	38	304	223	-	-
HCM Lane V/C Ratio	0.088	-	-	0.823	0.111	0.143	0.014	0.015	-	-
HCM Control Delay (s)	29.5	-	-	279.3	21.5	114.9	17	21.4	-	-
HCM Lane LOS	D	-	-	F	C	F	C	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.8	0.4	0.5	0	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	159	19	10	189	17	20
Future Vol, veh/h	159	19	10	189	17	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	173	21	11	205	18	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	194	0	411	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	227	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1379	-	597	858
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	811	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1379	-	592	858
Mov Cap-2 Maneuver	-	-	-	-	592	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	804	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	711	-	-	1379	-
HCM Lane V/C Ratio	0.057	-	-	0.008	-
HCM Control Delay (s)	10.4	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	149	152	54	32	0
Future Vol, veh/h	0	149	152	54	32	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	162	165	59	35	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	224	0	-	0	357	195
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	162	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1345	-	-	-	641	846
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	867	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1345	-	-	-	641	846
Mov Cap-2 Maneuver	-	-	-	-	641	-
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	867	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1345	-	-	-	641
HCM Lane V/C Ratio	-	-	-	-	0.054
HCM Control Delay (s)	0	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

TRAFFIC IMPACT ANALYSIS
CONTINENTAL MIXED USE
CONTINENTAL DRIVE/SCOTTSDALE ROAD

APPENDIX

Turn Lane Calculations

Un-Signalized Intersection (Right Turn Lane)
Location: North Access/Scottsdale Road
Approach/Leg: Northbound **2021 With Project**

V = vehicles per hour

PM Peak Hour
V = 45 vph

S = Storage = (V *2 min* 25 ft/veh)/60 min/hr

S (ft) = 45 vph*(2 min)*(25 ft/veh) / (60 min/hr) = 38 feet

Minimum Recommended Storage: 50 feet

Un-Signalized Intersection (Left Turn Lane)
Location: North Access/Scottsdale Road
Approach/Leg: Eastbound **2021 With Project**

V = vehicles per hour

AM Peak Hour
V = 28 vph

S = Storage = (V *2 min* 25 ft/veh)/60 min/hr

S (ft) = 28 vph*(2 min)*(25 ft/veh) / (60 min/hr) = 23 feet

Minimum Recommended Storage: 25 feet

Un-Signalized Intersection (Left Turn Lane)
Location: North Access/Scottsdale Road
Approach/Leg: Northbound **2021 With Project**

V = vehicles per hour

PM Peak Hour
V = 13 vph

S = Storage = (V *2 min* 25 ft/veh)/60 min/hr

S (ft) = 13 vph*(2 min)*(25 ft/veh) / (60 min/hr) = 11 feet

Minimum Recommended Storage: 25 feet

TRAFFIC IMPACT ANALYSIS
CONTINENTAL MIXED USE
CONTINENTAL DRIVE/SCOTTSDALE ROAD

APPENDIX

Crash Data

CITY OF SCOTTSDALE '13 -'14 COLLISION SUMMARY

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. SEV. #1	INJ. SEV. #2	PHYS. COND. #1	PHYS. COND. #2	VIOLATION #1	VIOLATION #2	ACTION #1	ACTION #2	TRAV. DIR. #1	TRAV. DIR. #2	MANNER OF COLLISION	COMMENTS
13-13585	130612	1558	SCOTTSDALE	RD	CONTINENTAL		N	300	1	1	0	0	2	1	2	3	SB	SB	4	
13-02417	130201	0741	SCOTTSDALE	RD	CONTINENTAL	DR	W	175	1	1	0	0	97	1	4	1	NB	EB	3	
14-27439	141220	1144	SCOTTSDALE	RD	CONTINENTAL	DR	AT		1	1	0	0	2	1	1	3	SB	NB	4	
13-25888	131110	0311	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1		4		2		1		NB		1	DUI
13-04498	130224	1514	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	16	1	5	97	SB	SB	2	CAR/BICYCLE
13-08253	130410	1542	SCOTTSDALE	RD	ROOSEVELT	ST	N	617	1	1	0	0	2	1	1	2	SB	SB	4	
13-10868	130509	1709	SCOTTSDALE	RD	ROOSEVELT	ST	N	350	1	1	0	0	2	1	1	5	SB	SB	4	MULTI VEH 3
13-15571	130709	0802	SCOTTSDALE	RD	ROOSEVELT	ST	N	400	3		0		2		7		NB		1	
13-16585	130721	2020	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	6	1	1	4	SB	WB	5	
13-18688	130816	1542	SCOTTSDALE	RD	ROOSEVELT	ST	AT		2	1	0	0	7	1	4	1	SB	NB	2	
13-25712	131108	1203	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	2	0	0	6	1	1	1	SB	WB	2	
13-26906	131122	1134	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	7	1	4	1	NB	WB	5	HIT AND RUN
13-29585	131223	1451	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	2	1	1	3	NB	NB	4	MULTI VEH 5
14-03254	140209	0135	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	12	1	8	1	SB	SB	6	
14-03615	140213	1415	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	99	99	5	6	NB	NB	4	
14-16014	140725	1600	SCOTTSDALE	RD	ROOSEVELT	ST	N	400	1	1	0	0		1	13	1	WB	NB	2	
14-17573	140815	1756	SCOTTSDALE	RD	ROOSEVELT	ST	AT		4	3	0	0	97	99	4	1	EB	NB	3	
14-18000	140821	0757	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	2	1	1	2	NB	NB	4	
14-20335	140920	1413	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	7	1	4	1	WB	SB	3	
13-19436	130825	1446	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1		0		2		5		NB		1	CAR/TREE

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. SEV. #1	INJ. SEV. #2	PHYS. COND. #1	PHYS. COND. #2	VIOLATION #1	VIOLATION #2	ACTION #1	ACTION #2	TRAV. DIR. #1	TRAV. DIR. #2	MANNER OF COLLISION	COMMENTS

KEY

INJURY SEVERITY: 1=NO INJURY, 2=POSSIBLE INJURY, 3=NON-INCAPACITATING INJURY, 4=INCAPACITATING INJURY, 5=FATAL INJURY, 99=NOT REPORTED / UNKNOWN

PHYSICAL CONDITION: 0=NO APPARENT INFLUENCE, 1=ILLNESS, 2=PHYSICAL IMPAIRMENT, 3=FELL ASLEEP / FATIGUED 4=ALCOHOL, 5=DRUGS, 6=MEDICATIONS, A=NO TEST GIVEN, B=TEST GIVEN, C=TEST REFUSED, D=TESTING UNKNOWN, 97=OTHER, 99=UNKNOWN

VIOLATION: 1=NO IMPROPER ACTION, 2=SPEED TOO FAST FOR CONDITIONS, 3=EXCEEDED LAWFUL SPEED 4=FOLLOWED TOO CLOSELY. 5=RAN STOP SIGN, 6=DISREGAREDED TRAFFIC SIGNAL7=MADE IMPROPER TURN, 8=DROVE/RODE IN OPPOSING TRAFFIC LANE, 9=KNOWINGLY OPERATED WITH FAULTY / MISSING EQUIPMENT, 10=REQUIRED MOTORCYCLE SAFETY EQUIPMENT NOT USED, 11=PASSED IN NO PASSING ZONE, 12=UNSAFE LANE CHANGE, 13=FAILED TO KEEP IN PROPER LANE, 14=DISREGARDED PAVEMENT MARKINGS, 15=OTHER UNSAFE PASSING, 16=INATTENTION/DISTRACTION, 17=DID NOT USE CROSSWALK, 18=WALKED ON WRONG SIDE OF ROAD, 19=ELECTRONIC COMMUNICATIONS DEVICE, 20=FAILED TO YIELD RIGHT OF WAY (added August 2014), 97=OTHER, 99 UNKNOWN

ACTION: 1=GOING STRAIGHT AHEAD, 2=SLOWING IN TRAFFICWAY, 3=STOPPED IN TRAFFICWAY, 4=MAKING LEFT TURN, 5=MAKING RIGHT TURN, 6=MAKING U-TURN, 7=OVERTAKING/PASSING, 8=CHANGING LANES, 9=NEGOTIATING A CURVE, 10=BACKING, 11=AVOIDING VEH/OBJ/PED/CYCLIST/ANIMAL, 12=ENTERING PARKING POSITION, 13=LEAVING PARKING POSITION, 14=PROPERLY PARKED, 15=IMPROPERLY PARKED, 16=DRIVERLESS MOVING VEHICLE, 17=CROSING ROAD, 18=WALKING WITH TRAFFIC, 19=WALKING AGAINST TRAFFIC, 20=STANDING, 21=LYING, 22=GETTING ON OR OFF VEHICLE, 23=WORKING ON/PUSHING VEHICLE, 24=WORKING ON ROAD, 97=OTHER, 99=UKNOWN

MANNER OF COLLISION: 1=SINGLE VEHICLE, 2=ANGLE (front to side, other than left turn), 3=LEFT TURN, 4=REAR END (front to rear), 5=HEAD-ON (front to front, other than left turn), 6=SIDESWIPE (same direction), 7=SIDESWIPE (opposite direction), 8=REAR-TO-SIDE, 9=REAR TO REAR, 97=OTHER, 99=UNKNOWN

TOTAL **20**

CITY OF SCOTTSDALE '15 -'16 COLLISION SUMMARY

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. SEV. #1	INJ. SEV. #2	PHYS. COND. #1	PHYS. COND. #2	VIOLATION #1	VIOLATION #2	ACTION #1	ACTION #2	TRAV. DIR. #1	TRAV. DIR. #2	MANNER OF COLLISION	COMMENTS
16-01258	160116	1536	SCOTTSDALE	RD	CONTINENTAL	RD	AT		1		0				5		NB		1	
16-26466	161127	1513	SCOTTSDALE	RD	CONTINENTAL		AT		1	1	0	0	20	1	6	1	NB	NB	97	
15-05170	150304	0127	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	4	0	20	1	4	1	NB	SB	3	DUI
15-05550	150308	1009	SCOTTSDALE	RD	ROOSEVELT	ST	AT		3		0		1		2		SB		1	
15-05803	150311	1614	SCOTTSDALE	RD	ROOSEVELT	ST	AT		99	99	99	0	2	1	1	3	NB	NB	4	HIT AND RUN
15-07873	150405	1247	SCOTTSDALE	RD	ROOSEVELT	ST	AT		3	1	99	0	6	1	17	1	SB	EB	2	CAR/BICYCLE
15-21544	151003	0231	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1		4	0	13	1	1	14	SB		5	HIT AND RUN
15-04786	150227	0617	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	4	0	7	1	4	1	EB	NB	3	DUI, HIT AND RUN
16-13083	160606	1835	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	20	1	4	1	EB	NB	8	
16-15585	160709	1105	SCOTTSDALE	RD	ROOSEVELT	ST	AT		2	2	0	0	2	1	1	3	SB	SB	4	MULTI VEH 4
16-20025	160906	1431	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1		0		1		1		SB		97	
16-16881	160728	1026	SCOTTSDALE	RD	ROOSEVELT	ST	N	20	1	1	0	0	4	1	1	3	SB	SB	4	
16-20085	160907	1111	SCOTTSDALE	RD	ROOSEVELT	ST	E	60	1	1	99	0	8	1	5	3	EB	WB	5	
16-12973	160605	1051	SCOTTSDALE	RD	ROOSEVELT	ST	N	300	1		0		13		1		SB		1	
16-28443	161220	1647	SCOTTSDALE	RD	ROOSEVELT	ST	N	359	1	4	0	0	20	1	4	1	EB	NB	3	
16-13179	160607	2050	SCOTTSDALE	RD	ROOSEVELT	ST	N	404	2	3	4	0	20	1	6	1	EB	NB	2	DUI
16-00437	160106	1339	SCOTTSDALE	RD	ROOSEVELT	ST	N	675	4	4	4	0	2	12	1	17	SB	SB	4	DUI, CAR/BICYCLE

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. SEV. #1	INJ. SEV. #2	PHYS. COND. #1	PHYS. COND. #2	VIOLATION #1	VIOLATION #2	ACTION #1	ACTION #2	TRAV. DIR. #1	TRAV. DIR. #2	MANNER OF COLLISION	COMMENTS

KEY

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ACTION: 1=GOING STRAIGHT AHEAD, 2=SLOWING IN TRAFFICWAY, 3=STOPPED IN TRAFFICWAY, 4=MAKING LEFT TURN, 5=MAKING RIGHT TURN, 6=MAKING U-TURN, 7=OVERTAKING/PASSING, 8=CHANGING LANES, 9=NEGOTIATING A CURVE, 10=BACKING, 11=AVOIDING VEH/OBJ/PED/CYCLIST/ANIMAL, 12=ENTERING PARKING POSITION, 13=LEAVING PARKING POSITION, 14=PROPERLY PARKED, 15=IMPROPERLY PARKED, 16=DRIVERLESS MOVING VEHICLE, 17=CROSING ROAD, 18=WALKING WITH TRAFFIC, 19=WALKING AGAINST TRAFFIC, 20=STANDING, 21=LYING, 22=GETTING ON OR OFF VEHICLE, 23=WORKING ON/PUSHING VEHICLE, 24=WORKING ON ROAD, 97=OTHER, 99=UKNOWN

MANNER OF COLLISION: 1=SINGLE VEHICLE, 2=ANGLE (front to side, other than left turn), 3=LEFT TURN, 4=REAR END (front to rear), 5=HEAD-ON (front to front, other than left turn), 6=SIDESWIPE (same direction), 7=SIDESWIPE (opposite direction), 8=REAR-TO-SIDE, 9=REAR TO REAR, 97=OTHER, 99=UNKNOWN

TOTAL **17**

CITY OF SCOTTSDALE '17 -'18 COLLISION SUMMARY

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. SEV. #1	INJ. SEV. #2	PHYS. COND. #1	PHYS. COND. #2	VIOLATION #1	VIOLATION #2	ACTION #1	ACTION #2	TRAV. DIR. #1	TRAV. DIR. #2	MANNER OF COLLISION	COMMENTS
1715987	170718	2130	SCOTTSDALE	RD	CONTINENTAL	ST	AT		1	1	99	0	2	1	1	3	SB	SB	4	
1807578	180404	2139	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	2	0	0	97	1	4	17	EB	SB	1	CAR/PEDESTRIAN
1728551	171227	0930	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	6	1	1	1	SB	WB	2	
1728061	171219	1608	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	20	1	4	1	WB	SB	2	MULTI VEH 3
1719793	170907	0731	SCOTTSDALE	RD	ROOSEVELT	ST	AT			1	99	0	99	1	1	2	NB	NB	4	HIT AND RUN
1712249	170531	0626	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	1	1	4	17	NB	NB	1	
1709969	170502	2126	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	1	0	0	20	1	4	1	WB	EB	2	
1705058	170303	1414	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1		99		97		10		WB		1	HIT AND RUN
1700106	170102	1300	SCOTTSDALE	RD	ROOSEVELT	ST	AT		1	3	0	0	6	1	1	1	EB	NB	2	
1718544	170821	1847	SCOTTSDALE	RD	ROOSEVELT	ST	N	35	99	1	99	0	20	1	1	1	SB	SB	4	HIT AND RUN
1710507	170509	1242	SCOTTSDALE	RD	ROOSEVELT	ST	N	150	99	1	99	0	12	1	8	1	NB	NB	97	HIT AND RUN
1717756	170811	1308	SCOTTSDALE	RD	ROOSEVELT	ST	N	200	1	1	0	0	97	1	10	1	NB	NB	4	

14-ZN-2018
9/1/2020

REPORT #	DATE YYMMDD	TIME HHMM	NORTH / SOUTH ST.	TYPE	EAST WEST ST.	TYPE	DIR FROM	DIST FROM	INJ. SEV. #1	INJ. SEV. #2	PHYS. COND. #1	PHYS. COND. #2	VIOLATION #1	VIOLATION #2	ACTION #1	ACTION #2	TRAV. DIR. #1	TRAV. DIR. #2	MANNER OF COLLISION	COMMENTS

KEY

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1=NO IMPROPER ACTION, 2=SPEED TOO FAST FOR CONDITIONS, 3=EXCEEDED LAWFUL SPEED 4=FOLLOWED TOO CLOSELY. 5=RAN STOP SIGN, 6=DISREGAREDED TRAFFIC SIGNAL7=MADE IMPROPER TURN, 8=DROVE/RODE IN OPPOSING TRAFFIC LANE, 9=KNOWINGLY OPERATED WITH FAULTY / MISSING EQUIPMENT, 10=REQUIRED MOTORCYCLE SAFETY EQUIPMENT NOT USED, 11=PASSED IN NO PASSING ZONE, 12=UNSAFE LANE CHANGE, 13=FAILED TO KEEP IN PROPER LANE, 14=DISREGARDED PAVEMENT MARKINGS, 15=OTHER UNSAFE PASSING, 16=INATTENTION/DISTRACTION, 17=DID NOT USE CROSSWALK, 18=WALKED ON WRONG SIDE OF ROAD, 19=ELECTRONIC COMMUNICATIONS DEVICE, 20=FAILED TO YIELD RIGHT OF WAY (added August 2014), 97=OTHER, 99 UNKNOWN

ACTION:
1=GOING STRAIGHT AHEAD, 2=SLOWING IN TRAFFICWAY, 3=STOPPED IN TRAFFICWAY, 4=MAKING LEFT TURN, 5=MAKING RIGHT TURN, 6=MAKING U-TURN, 7=OVERTAKING/PASSING, 8=CHANGING LANES, 9=NEGOTIATING A CURVE, 10=BACKING, 11=AVOIDING VEH/OBJ/PED/CYCLIST/ANIMAL, 12=ENTERING PARKING POSITION, 13=LEAVING PARKING POSITION, 14=PROPERLY PARKED, 15=IMPROPERLY PARKED, 16=DRIVERLESS MOVING VEHICLE, 17=CROSING ROAD, 18=WALKING WITH TRAFFIC, 19=WALKING AGAINST TRAFFIC, 20=STANDING, 21=LYING, 22=GETTING ON OR OFF VEHICLE, 23=WORKING ON/PUSHING VEHICLE, 24=WORKING ON ROAD, 97=OTHER, 99=UKNOWN

MANNER OF COLLISION:
1=SINGLE VEHICLE, 2=ANGLE (front to side, other than left turn), 3=LEFT TURN, 4=REAR END (front to rear), 5=HEAD-ON (front to front, other than left turn), 6=SIDESWIPE (same direction), 7=SIDESWIPE (opposite direction), 8=REAR-TO-SIDE, 9=REAR TO REAR, 97=OTHER, 99=UNKNOWN

TOTAL **12**

14-ZN-2018
9/1/2020

TRAFFIC IMPACT ANALYSIS
CONTINENTAL MIXED USE
CONTINENTAL DRIVE/SCOTTSDALE ROAD

APPENDIX

Comment Resolution

SOUTHWEST TRAFFIC ENGINEERING, LLC

Continental Mixed Use
TIA Dated 17 December 2018
Comment Resolution

8/16/2019

Item No.	Page No.	Reviewer	Code	Comment	Response
				City of Scottsdale	
1	General	Greg Bloemberg	D	The updated TIMA now includes a description and analysis of all proposed access points however, it unrealistically projects low trips through the west driveway on Continental Drive, roughly 1/9th the volume of the east driveway, even through the site plan indicates more parking spaces on the lower level in closer proximity to the west driveway. Please clarify.	Site assignment has been revised.

A - Will Revise
B - Consultant to Evaluate
C - City to Evaluate
D - See Response

SOUTHWEST TRAFFIC ENGINEERING, LLC

Continental Mixed Use
TIA Dated 8 June 2018
Comment Resolution

12/17/2018

Item No.	Page No.	Reviewer	Code	Comment	Response
				City of Scottsdale	
1	12	Greg Bloemberg	A	The trip generation estimate includes values for the existing auto dealership based on Gross Floor Area (GFA). The GFA used in the report includes an area representing the entire parcel. The estimate should be revised to reflect only the GFA of the sales office, or another method used to estimate the existing trips. Preferably, 24-hour driveway counts at all driveways serving the existing use should be gathered to estimate the actual trips generated by the site.	Trip generation comparison has been updated for the existing automobile dealership to only include the indoor sales and service areas based on ITE LUC 840.
2	General	Greg Bloemberg	A	The TIMA analyzes and describes two access driveways; however, the site plan shows three access points (One on Scottsdale and two on Continental). Please update the report to include all three access points.	West Access has been added to the analysis.
3	6	Greg Bloemberg	A	The site plan doesn't show the locations of existing driveways/alleys on the south side of Continental Drive. As such, staff was un able to accurately review the proposed Continental Drive site access points in relation to the existing driveway and alley across the street. The proposed driveways should align with the access points across Continental, or if skewed, be placed so vehicles making opposing left turns aren't positioned to increase the potential for head-on collisions if both east and west-bound vehicles make left turns simultaneously.	Site plan has been updated to show south side of Continental Drive.

A - Will Revise
B - Consultant to Evaluate
C - City to Evaluate
D - See Response